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SOCIAL EVOLUTION

From Birkner, "Der Diluviale Mensch in Europa."

The Neanderthal Man.

An Introduction to the Study of

SOCIAL EVOLUTION

THE PREHISTORIC PERIOD

BY

F. STUART CHAPIN, Ph.D.

PROFESSOR OF SOCIOLOGY AND ECONOMICS,
IN SMITH COLLEGE

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TO
MY WIFE

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PREFACE

The object of this book is to present in elementary form a summary of the most generally accepted evidence and theory of Social Evolution. It does not pretend to be an intensive treatise or to advance any untested doctrine. The writer believes that there is a definite place to be filled by a book which, as a text for the study of Sociology, applies the best of sociological and evolutionary theory to the historical study of society. With the increasing emphasis that historians are placing upon social and economic phenomena, the average student learns at least something of the importance of social forces. At the present time the vast period of human evolution before the historical period, is known to us only by the material presented in highly specialized works. There is no single elementary presentation of the increasing body of scientific knowledge which enables us to picture prehistoric conditions. The author believes that the study of history and social science is made more real and valuable by some familiarity with the conditions and factors which were important in this early period.

Professor W. I. Thomas says: "It is of course entirely proper for the student to limit himself very narrowly to a special field in order to work it intensively, but the historian, for instance, who begins the study of human activity with Greece and Rome or even with Assyria and Egypt, cuts himself off completely from the beginnings of his own subject as would the psychologist who neglected

all study of child-psychology and of animal mind, or the biologist who attempted to understand bird or insect life without a knowledge of the stages of life lying below these. Indeed, when we consider that the human race is one, that the human mind is everywhere much the same, and that human practices are everywhere of the same general pattern, it appears that the neglect of the biologist or psychologist to study types of life lower than those in which he is immediately interested could hardly be so serious as the neglect of the historian to familiarize himself with the institutional life of savage society."

Professor J. H. Robinson has recognized this necessity and says: "'Prehistoric' is a word that must go the way of 'preadamite,' which we used to hear. They both indicate a suspicion that we are in some way gaining illicit information about what happened before the footlights were turned on and the curtain rose on the great human drama. Of the so-called 'prehistoric' period we of course know as yet very little indeed, but the bare fact that there was such a period constitutes in itself the most momentous of historical discoveries. The earliest, somewhat abundant, traces of mankind can hardly be placed earlier than six thousand years ago. They indicate, however, a very elaborate and advanced civilization, and it is quite gratuitous to assume that they represent the first occasions on which man rose to such a stage of culture. Even if they do, the wonderful tales of how these conditions of which we find hints in Babylonia, Egypt, and Crete came about are lost. . . .

"From this point of view the historian's gaze, instead of sweeping back into remote ages when the earth was young, seems now to be confined to his own epoch. Rameses the Great, Tiglath-Pileser, and Solomon appear

practically coeval with Cæsar, Constantine, Charlemagne, St. Louis, Charles V, and Victoria; Bacon, Newton, and Darwin are but the younger contemporaries of Thales, Plato, and Aristotle."

Perhaps this short survey of a great subject will seem ambitious to many. But evolution means the slow unfolding of hidden potentialities. We must study prehistoric man as well as ancient man because the changes wrought in social evolution are so gradual that it is only by examining the long period that we can become conscious of their real significance. The change that is observable at the end of a long period is indistinguishable in the briefer interval. This is the author's justification for attempting to present as an organic whole a subject the divisions of which specialists often find quite baffling. In the effort to classify and generalize a great body of knowledge, the "clumsy forceps of our minds" always crush the truth a little and mar it. Yet there is a genuine gain from the very effort to attain perspective, although violence may be done to the strict accuracy of certain details. The artist suppresses many things in order to strengthen the general impression that the picture is to make. Thus, perhaps, the scientist can learn from his fellow seeker after truth.

The selected bibliographies which are appended after each chapter constitute the best works on specific points discussed in the course of the chapter.

The illustrations have been carefully selected and arranged with a view to illuminate certain points made in the text which the average student would otherwise be unable to visualize. The author would have considerable emphasis placed upon this use of the illustrations since each has been chosen for a definite purpose.

Photographs, models and maps, wherever these are available, may be used to great advantage in the classroom to supplement the illustration of the text.

The author's indebtedness to Professor Franklin H. Giddings for encouragement and stimulating suggestions is greater than can be expressed in a formal preface. But the author wishes to express his appreciative thanks to Dr. Giddings for permission to use unpublished material, for reading the manuscript, and for making many criticisms and suggestions which have been of greatest service.

The author's thanks are also due Professor Leonard S. Blakey and Mr. B. J. Baldwin for reading parts of the manuscript and for suggesting the revision of certain details. Acknowledgments and thanks are due the following authors for the courteous permission accorded to copy and reproduce certain diagrams, maps and illustrations from their works: Professor F. Birkner, *Der Diluviale Mensch in Europa;* Professor Katharine Coman, *The Industrial History of the United States;* Professor Joseph Déchelette, *Manuel D'Archéologie Prêhistorique;* Dr. Robert Forrer, *Urgeschichte des Europäers;* Professor James Geikie, *The Great Ice Age;* Professor M. M. Metcalf, *Organic Evolution;* Professor William Z. Ripley, *The Races of Europe;* and Professor E. L. Thorndike, *Individuality.* For extending the same courtesy the author wishes to thank the editors of *L'Anthropologie,* The Open Court Publishing Company, and the editor, Auguste Picard.

To the Century Company the author's thanks are due for courtesy in furnishing many excellent illustrations from the Century Magazine and other of their publications, and for coöperating with the author to secure the

satisfactory arrangement of certain details in this book.

In reading the proof the author was aided by his wife and Miss Charlotte B. Peck, and desires to express his appreciation for this valuable service. The author wishes to acknowledge his indebtedness to his wife for encouragement and assistance in the preparation of the book.

F. Stuart Chapin.

Northampton, July, 1913.

PREFACE TO SECOND EDITION

The publication of the second edition of this book has enabled the author to make a few improvements in the text and to add at the end of Chapter IV, a brief note upon the family as a factor in social evolution. This human institution has received undue emphasis as the original form of association. It seemed well to cite a few opinions upon this point.

Several errors which appeared in the first edition have been corrected. In a few cases the inadvertent omission of quotation marks and credits has been rectified. The author wishes to thank Professor M. M. Metcalf for calling attention to these infelicities. The helpful criticism of other details has been also appreciated by the author.

F. S. C.

December, 1914.

PREFACE TO THIRD EDITION

In this, the third edition, certain anthropological material has been brought up to date.

F. S. C.

December, 1916.

PREFACE TO FOURTH EDITION

Social evolution proceeds by social selection as well as by natural selection. More adequate treatment of the selective processes in society than appeared in Chapter IV of earlier editions of this book is given in Appendix I. For permission to print this material from his paper, "Primitive Social Ascendancy Viewed as an Agent of Selection in Society" in the Proceedings of the American Sociological Society, 1917, the author is indebted to the editors.

F. S. C.

July, 1919.

INTRODUCTION

The story of Social Evolution tells how one form of life came to dominate so completely the lives and destinies of all other forms, that for ages the creature man believed himself to be a separate and distinct creation, master of his fate. It is a wonderful story, surpassing in romance and fascination any epic or drama ever written. In the dark ages before recorded history, great forces were active, silently and insensibly working, molding the destinies of the future forms of life. In the process of this evolution an occasional gleam of consciousness began to dawn. Sensibilities became more refined; sympathy and compassion, the products of complex relations, tempered and modified the earlier, cruder adjustments; cruelty and oppression became less and less the guiding forces which governed the relations of conscious beings; tolerance and sympathy became more and more the directing principles of life.

In order to understand the important and determining factors in this process we must examine both the physical and the spiritual basis of man's supremacy. There are certain great principles which guide the growth and development of life. We must study the relation of these principles to man. In the chapters of Part I we shall examine the explanations that have been brought forward by naturalists for the origin of man's physical being. In the chapters of the remaining part of the book we shall examine the factors and the influences which have

caused the growth and development of man's spiritual, mental, and moral nature.

Human nature is to-day essentially the same as it was thousands of years ago. The great achievements of modern man are intellectual and dependent upon accumulated stores of information and knowledge. They are not moral attainments. The thin veneer of civilization is the charitable cloak which covers much brutality, deceit, and egotism, and no little hypocrisy, which often serves pleasantly to beguile the dead monotony of dissimulation.

SOCIAL EVOLUTION

SOCIAL EVOLUTION

I

VARIATION AND HEREDITY

It is a fact of general observation that the offspring of plants and animals tend to resemble the particular individuals from which they have sprung. "The young of a horse is always a horse and never a zebra. Wolves do not give birth to foxes. Sunflowers will not grow from thistle seed."[1] Nature keeps things in order, or, as the biologist says, plants and animals breed true. We have come to regard this relation as an established principle. But in Ancient and Medieval times many people believed that certain plants transformed into animals. In the Middle Ages they thought that the barnacle-goose originated from the goose-barnacle.[1a] Since then, our knowledge of natural law has so greatly increased that we are able to assert with utmost confidence that plants and animals breed true.

This likeness of parent and offspring is of such a nature that the young usually bear a somewhat close resemblance to their parents, in addition to sharing the wider similarity of structure and function which makes them belong to the same species as their parents. Thus the resemblance is both detailed and general. The offspring of domestic cattle are like their parents in such characteristics as size, form, color, and amount of milk.[1b]

[1] Metcalf, M. M.—*Organic Evolution*, 3rd ed., 1911, p. 3.
[1-a] *Ibid.* [1-b] *Ibid.*, p. 6.

The resemblance of parent and offspring is, however, not exact enough to be duplication. The family likeness is such that parents and progeny are quite distinguishable. "Tom" has his own individuality, and "Molly" has her peculiarities. Thus we see that there are individual differences which indicate how much the offspring vary from their parents and among themselves. The facts of individual difference we call *variation*. Our knowledge of variation permits us to say "that while, under the influence of heredity, the young tend to resemble their parents, because of variation this resemblance is more or less imperfect."[2]

To be convinced of this fact of variation one has only to take a few hundred individuals of any species and compare them with reference to any single trait. If one measure the lengths of a thousand oak leaves taken from the same tree, he will find that some are considerably longer than others, but that within certain limits most of the leaves have approximately the same length. So it is with any trait of any plant or animal,—there is much variation. The winter birds of east Florida show a variation in size of from fifteen to twenty per cent. among specimens of the same species and sex when taken in the same locality.

Thus the relation between parents and offspring is of such a nature that like tends to beget like, yet at the same time opportunity is allowed for the individual differences which we have called *variations*. But how does it happen that like tends to beget like? Why is it that the young of a horse will always be a horse and not a zebra? How is it that nature keeps things in order? For some time biologists have known that "when the parent's body is developing from the fertilized ovum, a resi-

[2] *Ibid.*, p. 7.

due of unaltered germinal material is kept apart to form the reproductive cells, one of which may become the starting point of a child." On this point Galton has written, "The total heritage of each man must include a greater variety of material than was utilized in forming his personal structure. The existence in some form of an unused portion is proven by his power . . . of transmitting ancestral characters that he did not personally exhibit. Therefore the organized structure of each individual should be viewed as the fulfilment of only one out of an indefinite number of mutually exclusive possibilities. His structure is the coherent and more or less stable development of what is no more than an imperfect sample of a large variety of elements." [3] The idea was more independently expressed and more fully developed by Weismann in 1893.[4] It is now the basis of our explanation of why like tends to beget like. It is the theory of the continuity of germinal plasm. Weismann says, "In development a part of the germ-plasm (i. e., the essential germ material) contained in the parent egg-cell is not used up in the construction of the body of the offspring, but is reserved unchanged for the formation of the germ-cells of the following generation." Thus it has been said that the parent is rather the trustee of the germ-plasm than the producer of the child. The philosopher Bergson has said, "Life is like a current passing from germ to germ through the medium of a developed organism. . . . The essential thing is the continuous progress indefinitely pursued, an invisible progress, on which each visible organism rides during the short interval of time given it to live." The reason why like tends to

[3] Galton, F.—*Natural Inheritance*, 1889, p. 18.

[4] Thomson, J. A., & Geddes, P.—*Evolution*, 1911, p. 114.

beget like should now be clear. It is the continuity of the germ-plasm.

When one compares a number of members of the same species, whether men, hens, dogs, pansies, eels or elephants, he finds that they differ from one another. It is possible to measure these differences. These "observed differences" may be due to many things. Many of them may be involved with sex, and thus accounted for; some, with age; others may be due to the influence of surroundings in early plastic years, for example, the twisted twig and the bent limb. These last are changes in the bodies of plants and animals which are acquired; they are modifications, not inborn. When from the total observed differences, these peculiarities of sex, age, and modification are subtracted, a very interesting remainder is left, which we define as inborn or germinal variations.[5] These variations are congenital, not made. They are often distinct at birth. They are in many cases, if not always, transmissible. They form what has been called the raw material of evolution.

The study and organization of facts bearing upon variation have disclosed that there are two different types of variation. The first, is known as fluctuating or continuous variation; in which the divergence from the parental character is relatively slight. The second, is known as stable or discontinuous variation; in which there is great divergence from the parental character. Some biologists consider the first non-hereditary, the second hereditary.

Fluctuating or continuous variation may be illustrated as follows: from the registration of variations that occur in the height of a large number of men taken at random, it was found that there was a proportion be-

[5] Thomson & Geddes, *op. cit.*, pp. 116-117. [6] Metcalf, *op. cit.*, p. 10.

tween the frequency of a particular variation and the amount of its deviation from the mean stature of the group. Among the measurements of 2,600 men, taken at random (that is, as they come and without any conscious effort to select only the tall or the short), there are 1 of 4 ft. 8 in.; and 1 of 6 ft. 8 in.; 12 of 5 ft.; and about 12 of 6 ft. 4 in.; that is, equal numbers at equal distances from the mean of 5 ft. 8 in. This illustrates that when the frequency and the magnitude of the variations are registered, they show what is called the normal curve of frequency. This can be illustrated more clearly by reference to the following table of the heights in centimeters of 1,000 ten and one-half year old American school boys.[7]

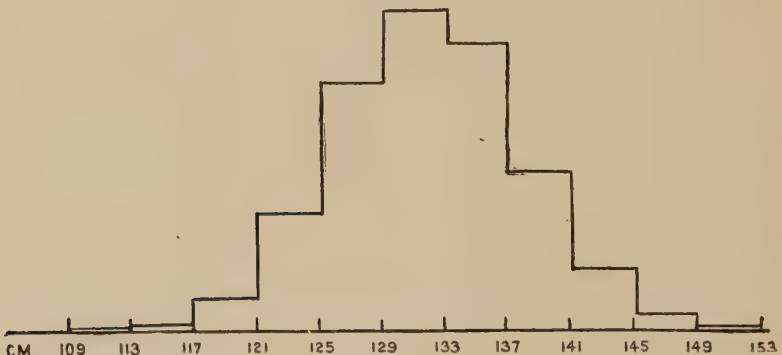
Between	109	and	113	centimeters	tall,	2	boys.
"	113	"	117	"	"	5	"
"	117	"	121	"	"	25	"
"	121	"	125	"	"	97	"
"	125	"	129	"	"	199	"
"	129	"	133	"	"	255	"
"	133	"	137	"	"	228	"
"	137	"	141	"	"	126	"
"	141	"	145	"	"	49	"
"	145	"	149	"	"	11	"
"	149	"	153	"	"	4	"

When this material is plotted in graphical form the distribution of stature is as represented in figure 1, letting the distance of each horizontal line from the base stand for the number of boys. Now if we were to draw a smooth curve through the tops of the columns we should have a bell-shaped curve of the type shown in figure 2. This illustrates graphically what we meant

[7] Thorndike, E. L.—*Individuality*, p. 8.

by the statement that there is a relation between the frequency of a particular variation and the amount of its deviation from the mean stature of the group.

The task of registering the variations that occur in any group of creatures may at first sight seem tedious and far removed from the warm pulsations of life, but



From Thorndike, "Individuality."

FIGURE 1. Distribution of Stature of American Boys 10½ years old.

a little experience in the measurement of such things as length of rose petals, the length of bird wings, or of star-fish arms, "will convince the student that biometrics may lead him into the very heart of the matter. If the registration of the dimensions of a particular character be carried on year after year in similar material, and shows a consistent increase in asymmetry or skewness of the curve (asymmetry or skewness means a curve in which the hump as in the figure, is not over the middle, but nearer one end, making the slope at that end more abrupt and at the other end more gradual) this must mean that the species is moving in a definite direction as regards the particular character measured. Similarly, the persistent occurrence of a well-substantiated double-humped

curve—not the result of modificational effects—may vividly bring home the fact that the species is dividing into two sub-species."[8] Thus, by means of statistics, which seems the dryest of all methods, we are able to see a species being born under our very eyes.

The point we have just made shows how a species might originate by the accumulation of extremely slight

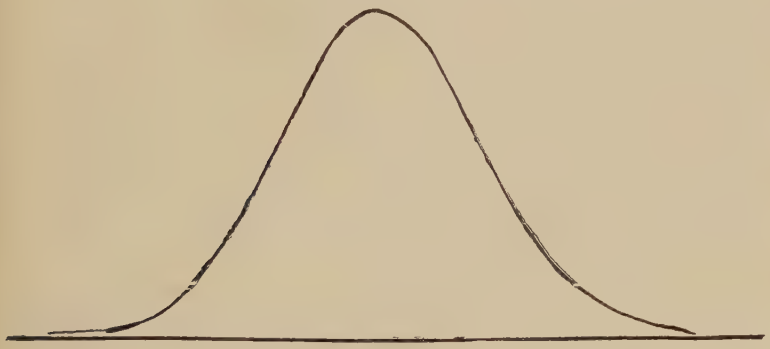


FIGURE 2. Curve of Distribution.

variations. But evidence is at hand to "show that organic structure may pass with seeming abruptness from one position of equilibrium to another." Changes of considerable amount sometimes occur at a single leap. These sudden jumps or changes are called "discontinuous variations," or sometimes, "sports," and, in certain cases, "mutations." Professor Hugo de Vries has made some very interesting and important experiments and observations on the origin of species in the plant kingdom. He found that species often arise from one another by discontinuous leaps and bounds as opposed to the continuous process. He therefore believes that

[8] Thomson & Geddes, *op. cit.*, pp. 121-122.

species (forms of life having a certain similarity and related by descent) appear "all at once" by mutations.

In support of this theory, Professor De Vries takes the case of a certain evening primrose which has shown sudden and repeated leaps with a remarkable subsequent constancy. The *Chelidonium majus laciniatum* appeared suddenly in the year 1590 in the garden of an apothecary at Heidelberg, and has remained constant ever since. These experiments and observations have led to another theory of descent. It is now held by a school of biologists represented by De Vries, that species have arisen by this discontinuous process, in which each new unit, "forming a fresh step in the process, sharply and completely separates the new form as an independent species from that from which it sprang." The new species originates from the parent species without any visible series of transitional forms. It can perhaps be made more clear by figure 3. The figure represents by A B the direct line of descent from which the parent B has sprung. Now with the usual fluctuating or continuous variation, the offspring of B would not be likely to have the same average (of any trait) as their own parents, but an average much nearer the average of the whole group to which the parents belonged. But in the case of the "sport," whose origin we are explaining, the offspring C of B will start a new and independent line of descent. That is, the offspring D of C, will not have an average nearer that of B than C was, but will have an average nearer that of their parents C. Thus the "sport" C, has established a new group type round which there will be fluctuating or continuous variation.

Galton has illustrated the process by analogy, but from another point of view. The polyhedron may be

compared with an organism. They "have this cardinal fact in common, that if either is disturbed without transgressing the range of its stability, it will tend to re-establish itself,"[9] that is, if tipped to the right or left it will fall back upon the original side, but if the range is passed, it will topple over into a new position of stability. This illustrates a mutation. There is now a new position of stability or average condition about which there will be fluctuation.

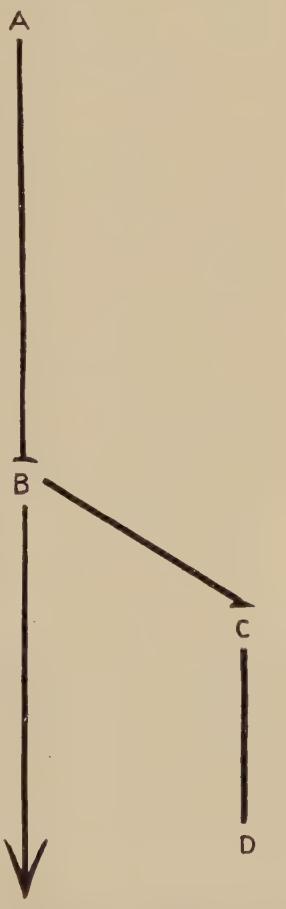


FIGURE 3. Diagram illustrating a Mutation.

In the present state of our knowledge of variations we are unable to say dogmatically whether species have arisen by the slow accumulated adjustments of fluctuating variation, or by the more rapid process of mutation. In support of the first theory there are numerous cases where species are connected by intermediate grades. There is much experimental evidence to support the second theory.

In 1900, when De Vries in Holland, Correns in Germany, and Tschermak in Austria independently, and almost simultaneously, reached results from the experimental study of heredity which have modified our views of the origin of species, the whole subject of heredity took on added interest.

[9] Galton, *op. cit.*, p. 28.

This increased experimentation and interest led to the discovery of a buried paper, written in 1865, by Gregor Mendel, an Austro-Silesian abbot. It proved to be a disclosure of great importance. Mendel had experimented in his garden upon the common edible pea. The law of

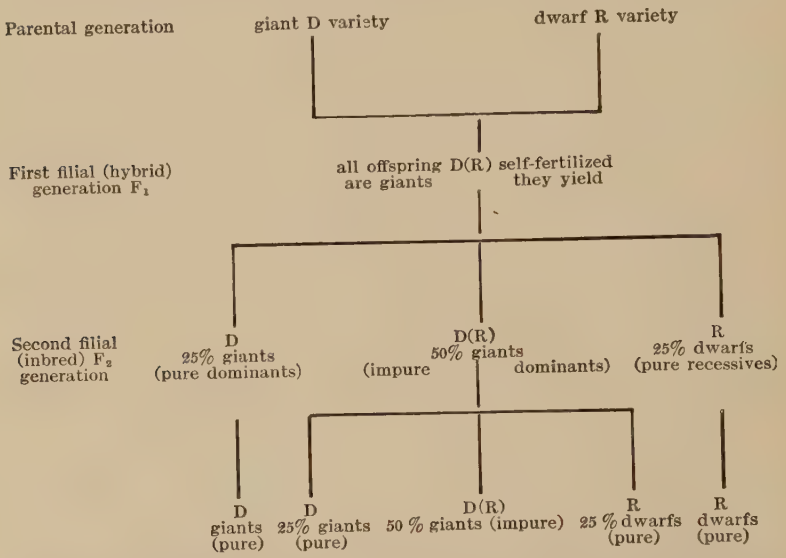


FIGURE 4. Diagram of Mendelian Inheritance in the Pea, where D stands for the Dominant Character, D(R) for the Impure Dominant, and R for the Recessive Character.

heredity which he discovered was ridiculed at the time of the writing of his paper, and the discovery was to all intents and purposes lost to science until about 1900.

The remarkable results of Mendel's experiments upon the common pea were as follows. He found that when he crossed a giant variety of 6 to 7 feet with a dwarf variety, ¾ to 1½ feet high, the offspring were all tall. The character of tallness which appeared in the hybrid generation (F_1), to the exclusion of dwarfness, was called by Mendel the "dominant" character, the other was

called the "recessive" character. But this was not all. By self-fertilizing the tall cross-bred peas (this corresponds to inbreeding in animals), giants and dwarfs appeared among their progeny in the average proportions of 3 to 1.

Now when the dwarfs of this F_2 generation were self-fertilized, it was observed that all of their offspring (F_3) were dwarfs. Moreover, successive generations bred from them were also all dwarfs. These are called recessives, since they are "pure" as regards dwarfness.

But when the giants of the F_2 generation were self-fertilized, it was discovered that their offspring were of *two kinds:* one-third of them (pure dominants) produced giants only; two-thirds of them (impure dominants) produced giants in the proportion of 3 to 1. Thus the F_2 generation, produced by allowing the crossbred forms or hybrids (F_1) to self-fertilize, consisted of one-quarter pure dominants, one-half impure dominants, and one-quarter recessives.[10]

The law will be made clear by examining Figures 4, 5 and 6, in which the inheritance of the waltzing trait is shown for mice, and the inheritance of colors is shown for red and white four-o'clocks.

Figure 5 shows how the waltzing character is recessive and absence of this character is dominant. In the first generation a normal mouse (represented in black), is crossed with a waltzing mouse (represented in white). The result is all normal mice in the first filial (hybrid) generation. When two mice of this generation are crossed, they yield waltzing mice in the proportion of one waltzing to three normal mice. When the waltzing mice of this generation are mated, they yield waltzing

[10] Thomson & Geddes, *op. cit.*, p. 129.

mice alone. This is because they are pure recessives. But some of the normal mice produce only normal mice; these are pure dominants, while others of the normal mice produce normal and waltzing mice in the proportion of three normal to one waltzing mice; these are impure

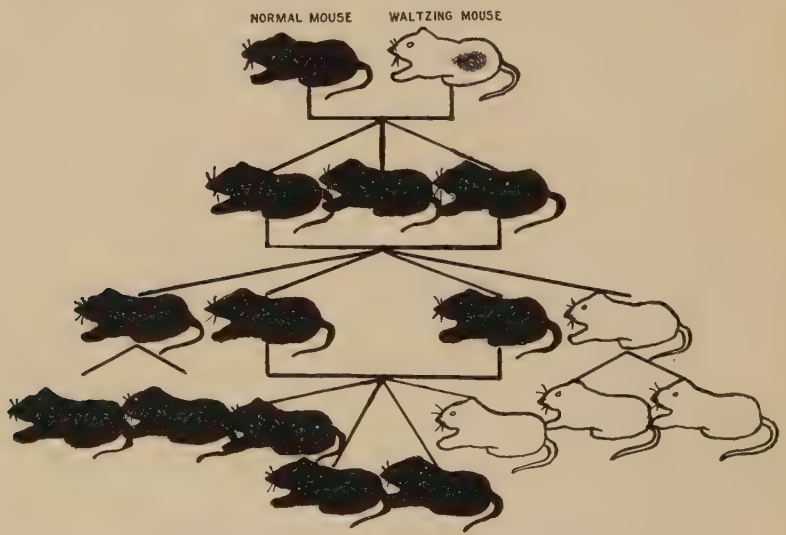


FIGURE 5. Mendelian Inheritance in Mice.

dominants. This law does not mean that if there were only four offspring of a mouse in the first filial generation F_1, one would be normal and would breed only normal, two would be normal but would breed both normal and waltzing mice, and one would be waltzing and would breed only waltzing mice. It might, of course, happen this way. What it means is, that on the average, if one were to study a great number of matings of normal and waltzing mice, the offspring would possess the waltzing trait in the proportion indicated. It does not enable one to make a dogmatic prediction about a small group of brother and sister mice.

Figure 6 shows the inheritance of color in which one

color (red) does not completely dominate the other. In this case the impure dominants show a color (pink) which is a blend of the colors of the parental generation.

This remarkable mode of inheritance has been demonstrated to hold for a great diversity of organisms: in mice, rats, rabbits, guinea pigs, cattle, poultry, canaries, snails, silk-moths; in beans, maize, wheat, barley, and stocks. In cattle, for example, hornlessness is the dominant and presence of horns the recessive character. In wheat, rough and red chaff are the dominant and smooth and white chaff the recessive characters.[11]

It is difficult to draw definite conclusions from the study of human inheritance on account of the great complexity of the human organism. Man is the result of the intermixture of so many different stocks that there are no "pure lines." Since experiment is out of the question, observation must be relied upon. But the rate of increase of the human species is slow (about 60 generations of men since the Christian era began), and the number of offspring are few. In spite of these difficulties studies have been made with the result that certain human traits appear to be inherited in accordance with Mendelian proportions.[12] For example,[13]—

Curly hair, *dominant.*	Straight hair, *recessive.*
Dark hair,	Light to red hair,
Brown eyes,	Blue eyes,
Normal pigmentation,	Albinism,
Polydactyly,	Normal,
Hereditary cataract,	Normal,
Normal nervous system,	Hereditary feeble-mindedness, insanity, epilepsy, etc.

11 Thomson & Geddes, *op. cit.*, p. 132.

12 Boas, F.—*The Mind of Primitive Man*, 1911, p. 78.

13 Davenport, C. B.—*Heredity in Relation of Eugenics*, pp. 31, 66, 77, 175.

Mendel's theory, like Weismann's, has the idea of germinal continuity for one of its foundations. It conceives of the hereditary relation as one between the parental and filial germ cells and not between the bodies of parent

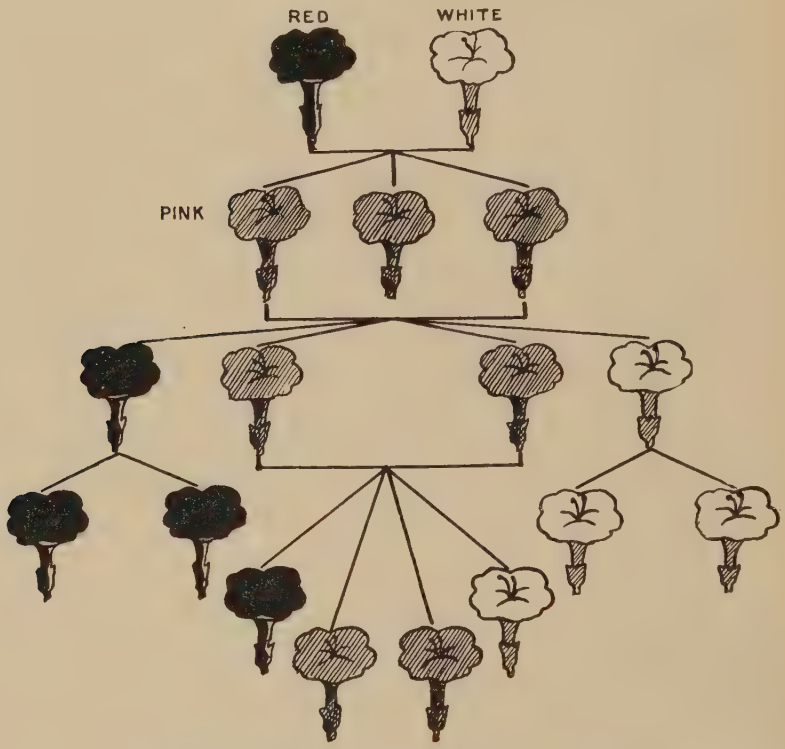


FIGURE 6. Mendelian Inheritance in Four-o'clocks.

and offspring. Mendelism explains the organism as built up of a number of definite and separably inheritable characters. Variation seems to consist in the presence or omission of elementary factors. Thus, the white sweet pea was brought about in the variation by which one of the color factors was dropped out. Variation is not always the progression from a lower degree of com-

plexity to a higher, but the reverse may be true.[14] Thus experimental breeding has shown that the white coat of the horse is not a simple character, but is due to several independently inheritable factors.[15]

Besides Mendel's Law, there are Galton's two statistical laws of inheritance: the Law of Regression and the Law of Ancestral Inheritance. The Law of Regression as first expounded was based upon measurements of the stature of over 900 English persons.[16] Galton found that the stature of an individual is determined by the racial type to which the parents belong, modified, however, by a tendency to revert to a type intermediate between the special variations represented by the parents. For example, if the father is very tall, and the mother somewhat taller than the average, the children tend to develop a stature which is somewhat near the racial type, but at the same time dependent upon an intermediate value located between the stature of the mother and that of the father. This law appeared to hold for the inheritance of stature, eye-color, and artistic ability. Biologists have criticized Galton's laws on the ground that they lump together both inherited and non-inherited variations. The Law of Ancestral Inheritance showed that on the average each parent contributes $\frac{1}{4}$ of every inherited faculty, each grandparent $\frac{1}{16}$, and so on. More recent studies have shown that the intensity of heredity for each parent may be expressed by about $\frac{1}{3}$.[17] The principle may be made clear by quoting from Dr. Boas: "Provided the mother differs in her stature by an amount of 9 cm. from the racial norm,—for instance, if

[14] Thomson & Geddes, *op. cit.*, p. 137.

[15] Davenport, *op. cit.*, p. 24. [16] Galton, *op. cit.*, chs. vi. and vii.

[17] Pearson, K.—"On the Laws of Heredity in Man," *Biometrika*, vol. ii, p. 357 *et seq.*; and Boas, F.—"Heredity in Anthropometric Traits," *Amer. Anthropologist*, N. S., vol. ix, p. 453 *et seq.*

she is 9 cm. taller than the average individual,—then we may expect the child to be one-third of 9 cm., or 3 cm., above the average. It will thus be seen that if both parents differ in the same direction from the average, the effect of both will be cumulative; and if both differ from the average of their people by the same amount, the joint effect of the two parents may be expressed by the coefficient of about two-thirds. In case, for instance, both father and mother should be 9 cm. above the type average, we should expect the child to be about two-thirds of 9 cm., or 6 cm., above the average." [18]

These variations, inherited in accordance with the laws that have been outlined, form what Professor Thomson has called the "raw materials" of evolution. Of the origin of these variations we know little. In the microcosm of the germ cells there goes on a process of extraordinarily intricate permutation and combination. Weismann supposes that there is a struggle within the germ cell between rival hereditary items. However this may be, there is much research still necessary before we can hope to speak in dogmatic fashion of the origin of variations.

SUPPLEMENTARY READINGS.

Boas, F.—*The Mind of Primitive Man.*
Crampton, H. E.—*The Doctrine of Evolution.*
Darwin, C.—*The Origin of Species.*
Davenport, C. B.—*Heredity in Relation to Eugenics.*
Galton, F.—*Natural Inheritance.*
Kellicott, W. E.—*The Social Direction of Human Evolution.*
Metcalf, M. M.—*Organic Evolution.*
Punnett, R. C.—*Mendelism.*
Romanes, G. J.—*Darwin and After Darwin,* I *The Darwinian Theory.*

[18] Boas, *op. cit.*, p. 82.

THOMSON, J. A. & GEDDES, P.—*Evolution* (Home University Library).
THORNDIKE, E. L.—*Individuality.*
WEISMANN, A.—*The Evolution Theory.*

II

THE STRUGGLE FOR EXISTENCE

Have you ever strolled across the sunlit meadows and then entered the cool silence of the forest and wondered at the apparent contentment and peace that reigned everywhere? The flowers were all so bright and birds chirping or singing in the trees seemed to lead lives of quiet uneventfulness. But look closer, and back of the silence of the forest is the cringing fear of every living thing. Under the apparent calm of nature there is the constant and bitter struggle for food, air, and space,—for life. All the trees and flowers, all the birds and other animals are engaged in a continual struggle for existence. There is struggle between plants and animals of the same species for the same food and space; the struggle of each and all against unfavorable conditions of climate, heat and cold, flood and drouth; the rivalry between them for mates; and a continual effort to rear their young in the face of that stern necessity which decrees that in spite of the strenuous efforts put forth, in a great majority of cases there is only failure and death.*

This fearful struggle for existence is the consequence of two facts: first, the amount of food and space upon the earth for plant and animal use are limited; and second, living creatures are so prolific that an unhindered process of reproduction would result in a geometrical rate of increase, and eventual over-population. This means that in every generation of every species a great

* Metcalf, *op. cit.*, p. 13.

many more individuals are born than can possibly survive. The result is that those born with certain weaknesses or under unfavorable conditions are the ones which are most likely to die, while those possessing greater strength or born under favorable conditions are the ones most likely to live. Hence it is that there tends to be a survival of the fit. Nature, so to say, selects the best to survive.

It is a self-evident fact that the amount of space upon the earth is limited. At first thought it is not so evident that living things tend to multiply in geometrical progression. But the truth of this principle is easily demonstrated. Romanes tells us that if the progeny of a single pair of elephants, which are the slowest breeding of animals, were allowed to reach maturity and propagate, in 750 years there would be living 19,000,000 descendants.[1] Professor Metcalf has computed the following table based upon the rate of increase of the common robin. Supposing that the yearly offspring of each pair of robins is four on the average, which is below the usual number, then a single pair of birds would have four young in the first generation. The second year they would have four more young, and their young of the first year, mating, would have eight young, four for each of the two pairs. In twenty years the descendants of the original pair would number over twenty billion![2]

This should make it clear that the earth could not support the progeny of even a single species if the natural increase were allowed to go unchecked.[2]

But in the case of the robins, more birds die each year than live because we find that the number remains con-

[1] Romanes, G. J.—*Darwin and After Darwin*, I *The Darwinian Theory*, 1901, p. 261.

[2] Metcalf, *op. cit.*, p. 14.

stant from year to year. There seems to be no great fluctuation in the number of any species from year to year.[3] Yet this apparently high death-rate of robins is surpassed by that of many other species. Among many fishes the "yearly death-rate is two hundred and fifty thousand times as great as the permanent population, since on the average only one male and one female out of the half million of young survive to take the place of their parents and keep the number of individuals in the species up to the usual mark." For every starfish living nearly half a million die each year.[3] Indeed, taking organic nature as a whole probably not one in a thousand young is allowed to survive to the age of reproduction.[4]

	Adults	Young
One pair of adult robins	2	
First year, their young		4
Second year	6	12
Third year	18	36
Fourth year	54	108
Fifth year	162	324
Sixth year	486	972
Seventh year	1,458	2,916
Eighth year	4,374	8,748
Ninth year	13,122	26,244
Tenth year	39,366	78,732
End of tenth year	118,098	
End of twentieth year	20,913,948,846	

While this law applies to the lower forms of life, plants and animals, one might say that men are not subject to it. It is true that the rigors of the crude struggle have been somewhat modified by man's greater cunning and forethought, but the law holds for men just as it does

[3] *Ibid.*, pp. 14-15.

[4] Romanes, *op cit.*, p. 262.

for snails and pansies, though in a slightly lessened degree. In the registration area of the United States in the year 1910, there were recorded 805,412 deaths from all causes. When we examine the number of deaths at different age periods we find that 26.98 per cent. of those who died were under 5 years of age. At no other five year period of life was the per cent. higher than 6.2, and this was at the five year age period 65-69 years. The following table shows precisely what the situation is.[5]

Under 1 year	19.17	per cent.
1 year	4.11	" "
2 years	1.83	" "
3 years	1.09	" "
4 years	.79	" "
Under 5 years	26.98	" "
5 to 9 years	2.23	" "
10 to 14 years	1.46	" "
15 to 19 years	2.45	" "
20 to 24 years	3.75	" "
25 to 29 years	4.07	" "
30 to 34 years	4.06	" "
35 to 39 years	4.43	" "
40 to 44 years	4.41	" "
45 to 49 years	4.65	" "
50 to 54 years	5.09	" "
55 to 59 years	5.04	" "
60 to 64 years	5.71	" "
65 to 69 years	6.29	" "
70 to 74 years	6.27	" "
75 to 79 years	5.65	" "
80 to 84 years	4.14	" "
85 to 89 years	2.24	" "
90 to 94 years	.77	" "
95 years and over	.18	" "
100 years and over	.05	" "

[5] See *Statistical Abstract of the United States*, 1911, p. 77.

This table, especially in the large infantile mortality, is sufficient to show that the struggle for life is not a phenomenon peculiar to lower animals. The high mortality in early years is evidence of the selective death-rate. The 26.98 per cent. of deaths under 5 years of age indicates the extinction of the less fit. The weaker children and those born under unfavorable circumstances are more likely to die before they are five years of age than are the stronger children or those born under more favorable circumstances. Thus it is that Nature selects the fittest to survive.

Because of the limited amount of food and space upon the earth and because many more individuals are born than can survive, there is a perpetual battle for life going on among all the individuals of any generation. In this terrible struggle for existence what individuals will be victorious and live? Obviously those best fitted to live, in whatever respect or respects their superiority of fitness may consist. These favored individuals transmit to their progeny their advantageous qualities. According to the laws of heredity the characters of the surviving generation are inherited by their offspring. It therefore follows that the "individuals composing each successive generation have a general tendency to be better suited to their surroundings than were their forefathers." And so it is that since most of the weaklings die in infancy, the perpetuation of the race is by the "flower of the flock" and the species tends to grow stronger. This is Darwin's great theory of Natural Selection, or selection by nature, for, out of the thousands who die, the thousandth individual who does survive in the battle for existence is on the whole the one best fitted to do so. If now, in any generation some new

and beneficial qualities happen to arise as slight variations from the ancestral type, they will (other things permitting), be seized upon by natural selection, and being transmitted by heredity to subsequent generations, will be added to the previously existing type. This then, is natural selection or the survival of the fittest, "the one term referring mainly to the process, the other to the result."

The process is analogous to that by which the gardener and the cattle-breeder bring about their wonderful results. Just as these men, by always "selecting" their best individuals to breed from, slowly but continuously improve their stock, so Nature by a process of "selection," slowly but continuously makes the various species of plants and animals better suited to the conditions of their life. What the skill of Luther Burbank has accomplished in the course of a few generations, Nature takes years or even centuries of experimentation to produce. By artificial selection, man works on external characters irregularly and imperfectly for a short time. Nature works on the whole machinery of life by consistent accumulation during whole geological epochs. Silently and insensibly working, natural selection is daily and hourly scrutinizing the slightest variations, "rejecting those that are bad, preserving and adding up all that are good."[6]

Under natural conditions there is an endless range of variation. We have seen in chapter I, how like tends to beget like, but that although the offspring is similar to the parent there is never precise reduplication. There is latitude allowed for individual variation. The individual differences are due to age, sex, modification, and

[6] Thomson & Geddes, *op. cit.*, p. 156.

real germinal variation. Whatever its cause, as long as the variation gives advantage in the struggle, the individual which possesses it, has a greater chance to survive, and surviving, to transmit it to his offspring. Occasionally, characters seem to go together in bundles; as such, they are often of advantage and are inherited. Some variations from the general type of the race are not transmitted. Variations of the mutation kind are inherited. If then, a mutation gives advantage to the individual possessing it, that individual will most probably survive while others not possessing the favorable trait will be at a disadvantage. But survival means not simply the fact of a safe and unhindered enjoyment of life. It means the bearing and rearing of young. Biologically, survival means that the individual reaches maturity and has offspring to which he transmits the favorable characteristics that aided him in the struggle.

The struggle will usually be "most severe between individuals of the same species, for they frequent the same districts, require the same food, and are exposed to the same dangers." In such a case the most minute variation may determine which will survive. As many variations seem to be the result of pure chance, so survival is in many instances the result of pure chance. An illustration will make this clear. Dr. C. B. Davenport of the Carnegie Institution for Experimental Evolution, placed 300 chickens in an open field. Eighty per cent. were white or black and hence conspicuous; 20 per cent. were spotted and hence inconspicuous. In a short time twenty-four were killed by crows, but only one of the killed was spotted. The white and black chickens were easily discernible to the crows and hawks flying overhead, and they swooped down and carried off twenty-

three. The spotted chickens were not so easily seen from above. Only one of them was killed. Thus the mere chance of coat color was a decisive factor in determining which chickens should survive. In time it is probable that more of the black and white chickens would be killed by birds of prey and only the spotted chickens would be left. Their offspring would tend to inherit their spotted coat and hence survive. All offspring which varied from this type in the direction of having a white coat or a black coat would be likely to be killed and leave no black or white coated progeny. Eventually we might have only a spotted variety of chickens in this area. This is an excellent illustration of the principle of natural selection.

Where the characters of an inhabiting species show great variation we conclude that there has not been rigorous selection with reference to that character. That is, the trait in question is one which, at the time being, is neither of great disadvantage nor great advantage to those who possess it. It was originally acquired or preserved because it was favorable, but some change has been wrought which makes it of indifferent value. On the other hand if any character shows very slight variation as between a large number of the species, we conclude that selection with reference to it has been severe; that is, the trait in question gives positive advantage. Thus, before the coming of the crows, coat color in chickens was of indifferent value for survival and there was wide variation from white to black. But with the coming of the birds of prey, conditions were changed and coat color had a positive survival value, if it were inconspicuous. The wide variation soon disappeared (the black and white chickens were killed off)

and all the chickens had a spotted coat. So by recording the variation in any trait we can tell whether it has a survival value and whether natural selection has caused its uniformity. This is the reason why we find that all the individuals of any species are more or less alike, because variation outside of certain safe limits is hazardous.

A rain storm once washed a large number of sparrows out of their nests. An observer gathered the injured sparrows together and tried to revive them. A large number of the birds recovered but some did not survive. Measurements of all the dead and revived sparrows were taken, and the curve showing their distribution (the frequency with which each measure occurred) was plotted. Then the measurements of the revived sparrows were taken separately, and their distribution was plotted. It was found that the measurements of the surviving sparrows varied less from the average degree of the character measured than did the measurements of the dead sparrows; that is, the dead sparrows were more variable. The curve representing the birds which survived was a narrower and steeper curve, which showed that the birds killed were more largely the unusual, the extreme, those widely differing from the average. We find pretty generally that the extreme variates from the normal are less likely to survive the dangers of their surroundings. The more normal are more likely to survive.

By examining the smooth curve in figure 2, which represents the approximate distribution of the frequencies at which different heights occur among ten and one-half year old American boys, one can better understand this normal order. If there should be an epidemic of scarlet fever and all of the boys contracted the disease, 30

might die. Probably the boys whose stature is between 145 and 153 cm., and hence considerably above the normal (which is between 129 and 137 cm.), are boys who have outgrown their strength. On the other hand, the boys whose stature is between 109 and 117 cm., and hence considerably below the normal, are boys who have been stunted perhaps because of constitutional weakness. This group of extremely tall and extremely short boys (for the age of 10½ years) is more likely, other things being equal, to succumb to the disease, than the more normal individuals; that is, outgrown strength and anemic condition in the one case, and weak constitution or lack of nourishment on the other, constitute conditions which break down the power of resistance to disease. It is therefore possible that most of the 30 cases of mortality would be found among this group of very short and very tall boys. If now, the curve were plotted for the remaining 970 boys who survived, it would be found that the curve was narrower than before, that is, that the falling away to the right and left had disappeared. In some such way as this, Nature tends to cut off the extreme variates and to reduce the race or species to a certain uniformity.

The plant and animal organism is a plastic, changing thing. It readily adapts itself to new situations. A sudden change in climate becoming a permanent condition of a given locality will affect all forms of life in that locality. Some individuals will not have sufficient adaptability to adjust themselves to the new requirements of their surroundings; they will sicken and die. Those individuals who chance to be plastic enough to meet the change by new adjustments in their habits and mode of life, will most probably survive and pass some

of their favorable qualities to their progeny. Some individuals will be born with variations from the adapted ancestral type which will prove of decided advantage. These organisms will have a better chance to survive than those that happen to vary from the ancestral type in a disadvantageous direction. And so, in the course of time, as the climate changes in that locality, the plastic group of living plants and animals will be modified and will undergo change from their original characteristics. As intermediate forms perish and new variations appear giving greater advantage in ability to meet the conditions of life, the present inhabitants will differ more and more from the original inhabitants so that if we were to see both side by side we should be led to think that we were observing two quite distinct forms of life instead of related forms. But if we could see the intermediate forms, we could reconstruct the series and understand how one form was descended in almost direct line from another form now quite extinct and with different structure and function. Although the intermediate forms connecting a living group of animals with an older form have long since passed from the surface of the earth, naturalists are able to reconstruct the series of descent with a remarkable degree of accuracy because Nature has preserved for us in the form of fossils the shape and mold in which these creatures were cast millions of years ago. This, in brief, is Darwin's famous doctrine of the origin of the species by descent under the influence of natural selection. It is the core of the theory of Evolution.

Let us now summarize the points that have been made in this chapter:

(1) The amount of food and space upon the earth for

plant and animal use is limited; many more individuals are born than can survive; the result is a perpetual struggle for survival.

(2) The fittest individuals tend to be the ones that survive; the battle is to the strong, the race is to the swift.

(3) The individuals so selected transmit many of their favorable qualities to their offspring by heredity.

(4) But although heredity produces a wonderfully exact copy of the parent in the child, there is never precise reduplication. There is latitude for individual variation. If, among the innumerable multitudes of individual variations that may occur, one chances to appear which, no matter in how slight a degree, gives the individual possessing it advantage in the struggle, that individual is bound to be favored with longer life and larger number of progeny—with survival, in short.

But the theory of natural selection proposes to explain only those characters which give advantage in the struggle for existence. It does not explain the existence of certain characters which do not give definite advantage to their possessors and yet tend to persist from generation to generation. Some of these characters, like the brilliant plumage of certain birds (peacock and peahen), would seem to be of positive disadvantage by making them conspicuous to their enemies. To account for these markedly contrasted sex-characters, Darwin advanced the theory of Sexual Selection. He believed that the individuals possessing the brilliant coloring were more attractive to those of the opposite sex and so had a better chance to mate than their fellows of a more sober hue. By the laws of heredity the brilliant plumage was transmitted, and the less attractive individuals, not

securing mates, or at any rate less robust mates, would have fewer progeny and eventually their line would die out. There were also combats between rival males for the possession of females as well as the preferential mating where the female chooses or seems to choose. There is little reason to doubt the effect of selection where there is combat among males. For when the younger or weaker candidates are killed, or expelled from the herd, or left unmated, there is discriminate elimination, the progeny inherit the strong constitutions of their parents. But as to preferential mating, the theory has broken down rather badly under criticism since Darwin's time.[7]

There is one other point of considerable importance which must be discussed before we can understand the real significance of natural selection. It is the alleged inheritance of acquired characters. The athlete has larger and more developed muscles than the average man. Do his children inherit larger and more developed muscles? Many years ago the naturalist Lamarck advanced a theory that modifications induced in the structure of the parent by adaptation to its surroundings were inherited by the offspring. His classic illustration of this theory was the giraffe. The entire frame of the giraffe has been adapted to support an enormously long neck which is of use to the animal in reaching the foliage of trees. Lamarck thought that the ancestors of the giraffe had ordinary necks but had increased the length of them through many successive generations by constantly stretching to reach high foliage. Moreover, when the neck became so long as to require for its support special changes in the general form of the animal, these

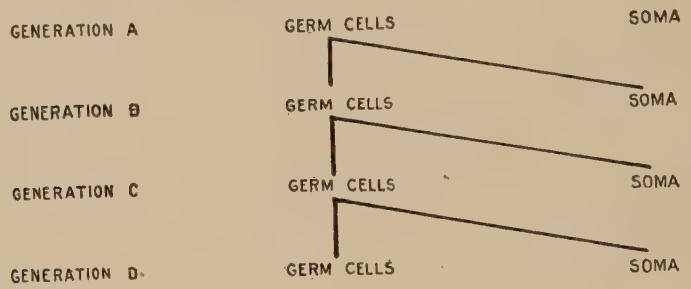
[7] Thomson & Geddes, *op. cit.*, p. 172.

changes brought about the dwindling of other parts from which so much activity was no longer required. The result was "that the whole organization of the animal became more and more adapted to browsing on high foliage." This same principle was applied to explain many other structural peculiarities. To clearly understand this problem, it is necessary to resort to the theory of inheritance.

In speaking of inheritance we said that the parent was rather the trustee of the germ-plasm than the producer of the child. In higher plants and animals the function of reproduction is not performed by the body as a whole, but is given over to special groups of cells, the *germ cells,* constituting the ovaries and testes. It is from these cells that new individuals arise. In view of this the problem we have just been considering is not so simple. For example, how can the enlargement of a muscle due to exercise, so affect the *germ cells,* which lie at some distance from the muscle in question, as to cause the new individual, which shall arise from these *germ cells,* to have the corresponding muscle in its own body enlarged? Under ordinary conditions it is only the *germ cells* in the body which have any descendants in the following generation.[7a] In the body there are muscle cells, bone cells, nerve cells, etc. Weismann used the term *soma* to include all the cells of the body which are not *germ cells.* Now the whole body of the offspring comes from the union of two *germ cells;* an egg from one parent and a spermatozoon from the other.[7b] No somatic cell gives rise to any part of the offspring. While the fertilized egg is developing into an adult organism it divides into a number of portions called blastomeres,

7-a Metcalf, *op. cit.*, p. 77. 7-b *Ibid.*, p. 73.

some of these form the *germ cells* of the new individual, the remainder become its *soma*. The *germ cells* of one generation are thus derived almost directly from the *germ cells* of the preceding generation.[8] One can now understand more clearly the significance of the theory of the continuity of germinal plasm. Professor Metcalf



From Metcalf, "Organic Evolution."

FIGURE 7. Diagram of Inheritance of Body Cells and Germ Cells.

has illustrated this principle by the simple diagram shown in figure 7.[8]

The diagram shows "that both the *germ cells* and the *soma* of any generation are derived from the *germ cells* alone of the preceding generation." No modification in a somatic cell of the parent could, therefore, cause a corresponding modification in the *soma* of the child; because the *soma* of the child is descended from the parental *germ cells*. In the case of the athlete the enlarged muscles would mean modification in the *soma*, but this modification would not appear in his child because only the *germ cell* is inherited, not the *soma*.[8]

Modifications of the *soma* are of two kinds: "first, those produced by the effect of the environment upon the organism; and second, those resulting from the reac-

[8] Metcalf, *op. cit.*, p. 73.

tion upon itself of the activity of the animal or plant."[9]

The occupation of a blacksmith is one which develops the muscles of the arm by the continuous and vigorous form of exercise of hammering iron. If the blacksmith has a son who becomes a bookkeeper, does the son have any stronger right arm than he would have had if his father had been an office clerk? Certainly the size of a muscle is increased by use, and decreased size results from disuse. Are these effects inherited by the offspring? One point must be noted carefully: the fact that the blacksmith does "develop strong muscles as a result of the exercise shows that he must have an inborn capacity for developing strong muscles by exercise." But if the blacksmith "inherited from his parents the ability to develop strong muscles" by exercise, his son in turn would inherit from him the same ability.[9] Exercise or the lack of it would therefore only bring out the latent tendency or simply leave the natural tendency to work itself out. The innate capacity would be inherited, not the accentuated development induced by exercise. "The child is not the child of the biceps muscle of the parent, but the child of the *germ cells* of the parent."[9] The biceps muscle of the parent has little to do with these *germ cells.* How therefore, could the use of the biceps muscle in the arm of the parent so affect the offspring that he would have stronger biceps than if his parent had not developed his own through exercise? There is little evidence to support the doctrine of transmission of acquired characteristics.

But if there is no direct transmission of the individual modifications produced by environment, wherein does the importance of function and environment consist?

[9] *Ibid.*, pp. 75-77.

The answer is found in the selective influence of environment. There is an endless diversity of environments. The iceberg, the hot spring, the mountain top, the abysses of the ocean, the interior of another creature, all constitute a complex of changing influences. "In many cases where the external changes are regularly recurrent like the seasons and the tides, the organism falls into step with them so that there are internal rhythms." To some of these changes the living organism is able to adjust itself temporarily. To others the response is not so delicate, and the novel conditions provoke structural changes from which the organism never recovers, the limits of organic elasticity having been passed. Adaptation is the key-note of organic nature, and it is exactly the thing natural selection secures. However modified, those individuals which are not adapted to their environment are destroyed in the struggle for existence, leaving only the well-adapted forms alive. The environment molds the living organism. Those whose innate plasticity is equal to the occasion are modified and survive. Those whose plasticity is not equal to the occasion are exterminated. This modification takes place generation after generation, but, as such, is not inherited. But any variations arising in the *germ cells* which are similar in direction to these modifications, will tend to support them, and to favor the organism in which they occur. Thus plastic modification leads, and germinal variation (variations arising in the germ cells) follows; the one paving the way for the other. The modification is not inherited, but it establishes a condition under which congenital variations [10] are given time to get a hold on the

[10] Congenital variations are variations which arise in the *germ cell.* They are variations which are inherited. They are not modifications.

organism, and are thus enabled by degrees to reach the fully adaptive level. Natural selection cuts off the unadapted individual. The plastic individual though originally unadapted to its particular environment, may be modified in such a manner that it survives. Of its offspring those who are plastic and adaptable survive, all others perish. But if one among its offspring possesses a germinal variation which better adapts it to the surrounding conditions, it immediately has an advantage in the struggle, and its progeny will inherit the favorable quality. These offspring which possess an innate adaptation will have a much better chance for longer life and larger families than those which possess mere plastic modifiability. In this way, during the evolution of life from low to higher and higher forms, Nature has weeded out and exterminated the ill-adapted organisms, tolerating the temporary compromise of modification until the progress of reproduction shall give rise to a real germinal variation (mutation) which brings renewed stability to the species.

SUPPLEMENTARY READINGS.

Boas, F.—*The Mind of Primitive Man.*
Crampton, H. E.—*The Doctrine of Evolution.*
Darwin, C.—*The Origin of the Species.*
Davenport, C. B.—*Heredity in Relation to Eugenics.*
Galton, F.—*Natural Inheritance.*
Kellicott, W. E.—*The Social Direction of Human Evolution.*
Metcalf, M. M.—*Organic Evolution.*
Punnett, R. C.—*Mendelism.*

Since modifications do not seem to be inherited, it follows that the only kind of variations which count in the offspring are germinal variations. Mutations or stable variations are germinal variations and are therefore of more importance in evolution than fluctuating or unstable variations which are not transmitted to offspring. See Metcalf, pp. 82-86.

ROMANES, G. J.—*Darwin and After Darwin*, I *The Darwinian Theory*.

THOMSON, J. A. & GEDDES, P.—*Evolution* (Home University Library).

THORNDIKE, E. L.—*Individuality*.

WEISMANN, A.—*The Evolution Theory*.

III

THE ORIGIN AND ANTIQUITY OF MAN

Since we explain the origin of different forms of animal life by adaptive modification and descent, it is only one step further to apply the same reasoning to the human species and to account for man as descended from some lower animal form now extinct. Darwin advanced this theory in his, "Descent of Man." Since Darwin wrote there has been much evidence gathered to support the doctrine of descent. The evidence of evolution is now based upon the discoveries of the explorer, paleontologist, anatomist, embryologist, and physiologist. Most natural scientists regard this body of testimony as constituting a confirmation of the theory of evolution. For certain forms of life it is indeed, quite conclusive.[1] In this chapter, we shall concern ourselves with an examination of the chief evidences for the doctrine that man is descended, in common with other animals now living, from some lower and extinct form.

The success of any demonstration that man is related by descent to some lower creature, depends largely upon our ability to reconstruct the series of related forms. When the doctrine of the descent of man was first advanced, superficial and popular writers immediately jumped at the conclusion that naturalists believed that man was descended from the "monkey." This, of

[1] But this is a matter that the reader can look up for himself in the many books now available upon the subject.

course, is quite absurd, as man could obviously not be descended from a form of life now living. The ape and the monkey family, together with man, are probably descended from some generalized ape-like form long since perished from the earth. They both may have a common ancestor: one is not descended from the other.

The human species, or Hominidæ, is not descended from the Gorilla or the Chimpanzee, but the "ascent of the Hominidæ is in an independent line from some long since extinct generalized form, from which the other branches also spring in independent lines. All have some features in common, while each presents some special characters. The points of resemblance between the Hominidæ and the Simiidæ are far more numerous than between the Hominidæ and any other group."[2] Keane infers from this that the divergence of the higher groups took place in the sequence indicated in the following classification. For this reason the study of man from the physical side is confined to his relation to the higher apes.[3]

It has been customary in modern zoölogical classification to detach from the Class Mammals, the large and dispersed group of Apes and Half-Apes (Lemurs), to constitute the independent order of *Primates,* so named by Linné. Recent systematists divide the order into two suborders, *Lemuroidea* and *Anthropoidea,* and subdivide the Anthropoidea, the manlike forms, into five families—*Hapalidæ, Cebidæ, Cercopithecidæ, Simiidæ,* and *Hominidæ* (human species).[4] The reasons for asserting that men are primates and are closely related to the Simiidæ, are, that part for part the skeletons, pelvis, ribs, hands, feet, spinal columns, teeth, and bones of the skull, are

[2] Keane, A. H.—*Ethnology,* 1896, p. 19.

[3] *Ibid.,* p. 20.

[4] *Ibid.,* p. 17.

From Romanes, "Darwin and after Darwin."

FIGURE 8. Hair-tracts on the Arms and Hands of Man, as compared with those on the Arms and Hands of the Chimpanzee.

the same in all fundamental regards. In all essential features the sets of bone parts are closely similar.[5] Now if we turn to structures other than the skeleton, we find there are some remarkable similarities in certain minor details. For example, we think of hairiness of the apes as distinguishing them rather sharply from man, but in reality the whole of the human body is covered with hair, except the palms of the hands, the soles of the feet, and the backs of certain terminal joints; these same portions are hairless in apes. Moreover, the slant of the hair in the several regions of the body, notably on the arms, is the same that we observe in apes.[6] In apes and man there is reminiscence of the ancestral functional tail—the coccyx, in fact, a reduced tail.[7] Our ears are slightly, if at all movable, yet we retain in a vestigial condition the muscles which in some ancestor must have served to move the ears.[8] The vermiform appendix is less developed in man than in the apes, and is relatively larger in the human fœtus than in adult man. Moreover, at the inner angle of the human eye is a fold of tissue which has little or no meaning unless it be explained as a remnant of that third eyelid which in many lower vertebrates, for example, birds, is greatly developed and can be drawn over the whole eyeball inside the outer eyelids. Unless we regard these vestigial structures in man as the traces of an earlier condition through which our ancestors have passed, they have no intelligent meaning.

The study of embryology reveals many points of resemblance between the human embryo, in the earlier

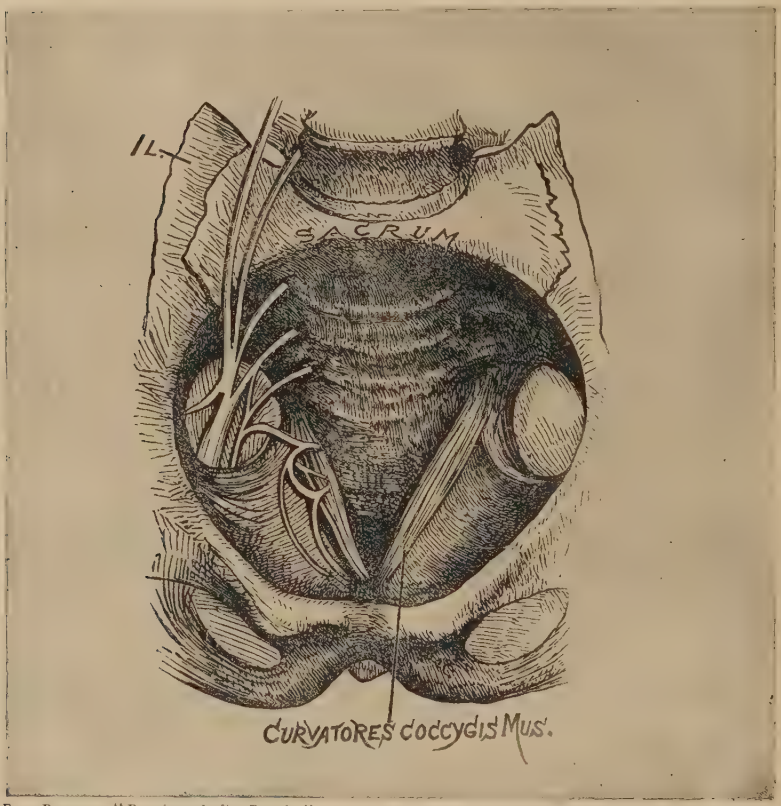
[5] Romanes, *op. cit.*, pp. 74-93; Metcalf, *op. cit.*, pp. 167-172.

[6] See figure 8.

[7] See figure 9.

[8] See figure 10.

stages of its growth, and the embryos of a number of other vertebrates. Figure 11 shows how the embryo



From Romanes, "Darwin and after Darwin."

FIGURE 9. Front View of Adult Human Sacrum, showing abnormal persistence of Vestigial Tail-muscles.

of man is closely related to the embryo of lower forms, where in stages I and II many features of the human embryo are reminiscent of its fishlike early ancestors. There is an epigram among zoölogists that the individual climbs up its own genealogical tree. This bears, of course, only a general interpretation. Yet, there is lit-

tle doubt that the development of the individual is in some measure to be explained as a condensed recapitu-

From Romanes, "Darwin and after Darwin."

FIGURE 10. Rudimentary, or Vestigial and Useless, Muscles of the Human Ear.

lation of the presumed racial evolution. In other words, the individual in its embryological development passes through with relative rapidity, the lower stages and the intermediate forms which took millions of years in the slower process of evolution for the species to achieve. In this sense, the embryological development of the in-

dividual is a recapitulation of the life history of the species.

During the early life of the human infant there are indications of considerable interest. In the development of the child after birth the spinal column has a single curve, as it does in apes and monkeys, instead of the S-shaped curve seen in adult human beings. The baby holds its feet in a position characteristic of the apes.[9] For a few weeks after birth, the child has a remarkably strong finger-grip, recalling the strength with which the young apes grasp the mother's hair, as she climbs with them among the trees. The young baby is able to sustain its own weight by its hands. When it hangs in this manner it often shows a position of the legs which is strikingly apelike.[10]

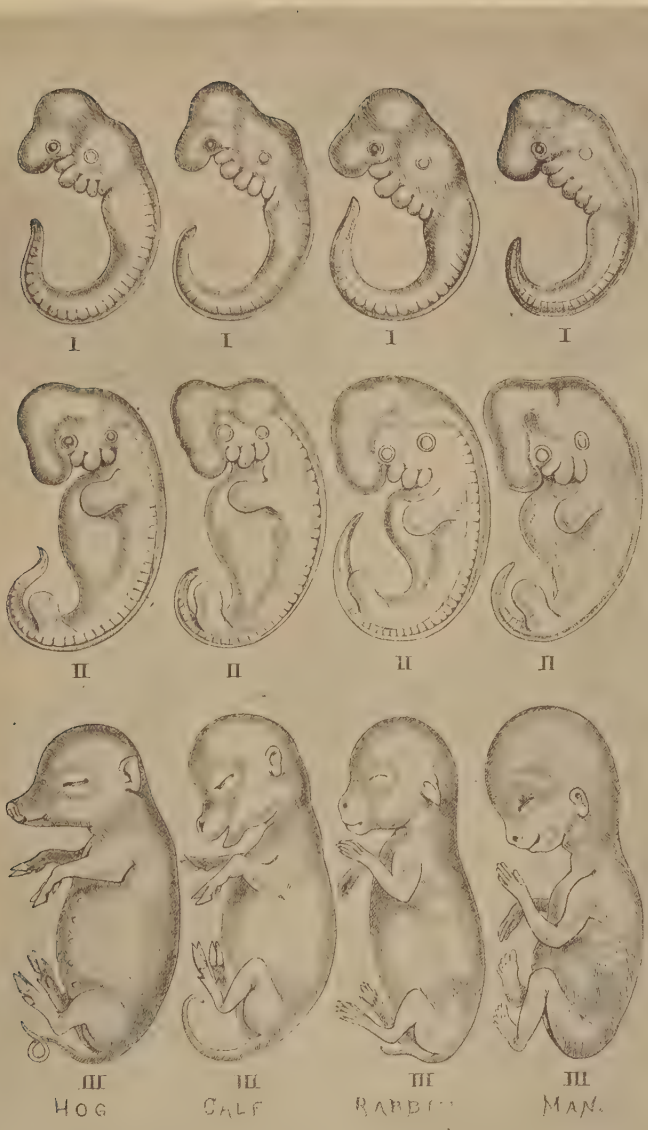
There is much more evidence along anatomical and embryological lines, but the character of this evidence has been sufficiently illustrated. The whole structure of man shows that he has arisen by differentiation from lower vertebrates. There seems to be "no scientific reason for separating man from the rest of the animal kingdom as regards the processes of evolution."[11] We do not yet know all the stages through which the human body passed in the process of its evolution, and we do not know many of the details by which his mental faculties have arisen from the lower condition of mind seen in other vertebrates; but the evidence which we do possess presents no serious reason for believing that the method of their evolution has been different in any fundamental regard from the methods by which the minds and bodies of other animals have been developed.[12]

[9] See figure 12.

[10] See figure 13.

[11] Metcalf, *op. cit.*, p. 170.

[12] *Ibid.*



om Romanes, "Darwin and after Darwin."

FIGURE 11. A Series of Embryos at Three Comparable and Progressive Stages of Development, representing Four Divisions of the Class-Mammalia.

In common with other animals "men often fail in the struggle for existence, become submerged and disappear." Natural selection operates among mankind to exterminate the unfit and to preserve the better adapted individuals who transmit to their children the characteristics

From Romanes, "Darwin and after Darwin."

FIGURE 12. Portrait of a Young Male Child. Photographed from life, when the mobile feet were for a short time at rest in a position quite apelike.

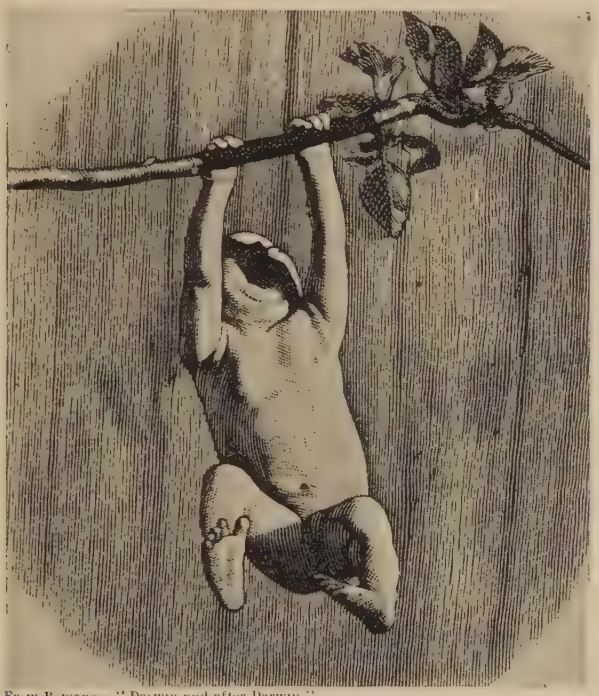
which gave them advantage. Sexual selection is probably more operative in man than in any other animal species. Among men, especially civilized men, choice in marriage has come to be based less upon the physical attractions which appeal to the lower animals, and more largely upon intellectual and moral attractions. Sexual selection thus serves to increase and perpetuate these highly important characteristics.[12a]

12-a *Ibid.*, p. 171.

We have now reviewed the evidence which leads us to believe that man is related to forms of life still extant. This evidence constitutes a presumption which justifies us in the belief that we shall discover the intermediate forms and so partially complete the series of man's descent. The gaps in this series must be filled by the reconstructed skeletons of bone remains of prehistoric man. In consideration of the fact that bone usually decays within a comparatively short time, the chances are slight of finding remains in a sufficient state of preservation to constitute positive evidence. Under certain peculiar conditions, these bone remains are preserved for great periods of time. They must be protected from the action of the air, the corrosive action of water, and from the destructive action of insects and certain plant agencies which cause decay. The necessary conditions are present in dry caves and where natural agencies have deposited layers of sand and gravel. Hence it is that the bone remains of prehistoric man are most frequently found in undisturbed boulder-clays and drift, or imbedded in the floor of some cave of great antiquity. Investigation and discovery have brought to light a considerable number of bone remains of prehistoric man. We shall, therefore, examine this evidence to ascertain how far we may expect to reconstruct the intermediate steps in the descent of man.

In the first place how are we able to tell certainly whether any bone remains which we find are reminiscent of prehistoric man? Is it not possible that they are simply the remains of some relatively modern pathological individual and not of some lower type of man? The associated circumstances are of utmost importance. If the particular part of a skull which we have discovered

was found imbedded many feet below the surface in undisturbed beds of sand or gravel, and geologists tell us the age of the sand bed, the age of the remains must be at



From Romanes, "Darwin and after Darwin."

FIGURE 13. An infant, three weeks old, supporting its own weight for over two minutes. The attitude of the lower limbs, feet, and toes is strikingly simian.

least as old as the sand bed.[12b] Geologists are able to estimate with approximate accuracy the age of certain deposits of sand or gravel by determining the rate at which similar beds are being formed at the present day through the agency of rivers or glaciers. In this way we may be certain of the age of these remains within a negligible error. It is to be remembered that geologists measure

12-b The bones of associated fauna are also an evidence of antiquity.

time in thousands and millions of years.[13] Geologists divide the time of the earth's development from an uninhabitable sphere to its present state, into several great epochs in accordance with the type of rock formation existing. The Paleozoic or Primary and the Mesozoic or Secondary, cover the vast epochs when only the most rudimentary forms of life existed. It is the Tertiary and the Quaternary, the periods during which the higher Mammals appeared, that are of interest to us. As will be seen from the diagram, the early or lower Quaternary began about three-quarters of a million years ago. The first fossil remains of prehistoric man come from the geological formation of this period.

Before we may hope to have a clear understanding of the antiquity of man, there is some further evidence of a geological nature which we shall have to examine.

It is important to know the main facts and theories of the glacial periods, because it is the duration and frequency of occurrence of these ice ages which give us the most trustworthy evidence of the antiquity of man. If we can learn the age of certain glacial deposits by measuring their rate of formation, we are in a position to say something definite as to the age of human remains and implements found beneath them. It is a generally accepted fact that many ages ago there were vast sheets of continental ice mantling large portions of Europe and North America, just as Greenland is mantled to-day.[14] But it is not so generally known that the cold was not constant during the age of ice. The first southward advance of the Arctic ice-sheet was followed by a period of retreat during which temperate conditions prevailed. In

[13] See figure 14 for the comparative magnitude of geologic time and the age of human remains.

[14] See figure 15.

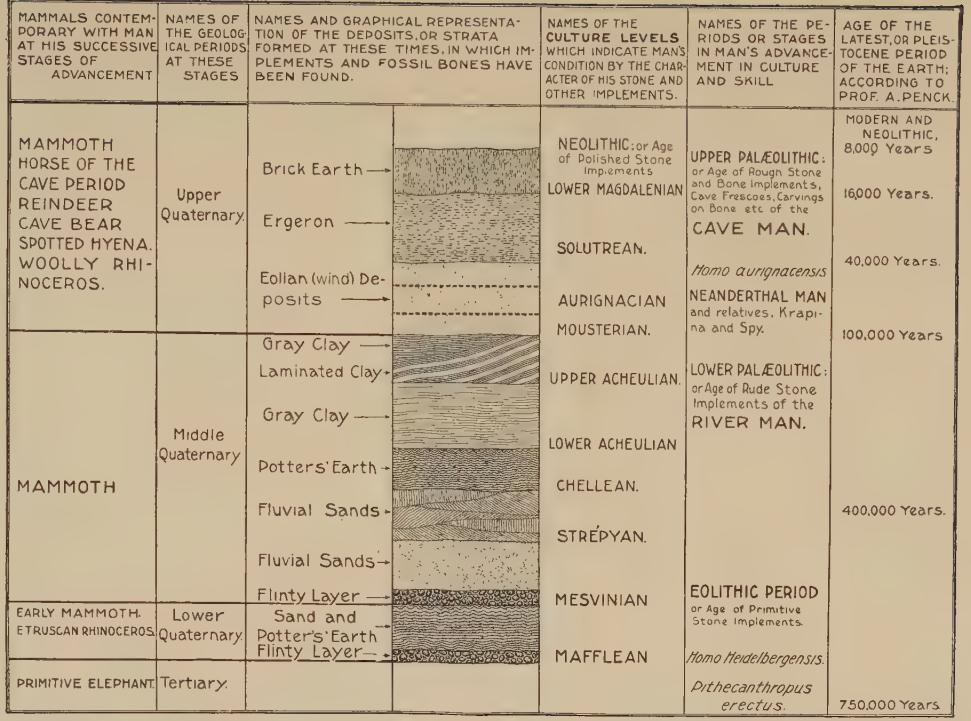

MAMMALS CONTEMPORARY WITH MAN AT HIS SUCCESSIVE STAGES OF ADVANCEMENT
NAMES OF THE GEOLOGICAL PERIODS AT THESE STAGES
NAMES AND GRAPHICAL REPRESENTATION OF THE DEPOSITS, OR STRATA FORMED AT THESE TIMES, IN WHICH IMPLEMENTS AND FOSSIL BONES HAVE BEEN FOUND.
NAMES OF THE CULTURE LEVELS WHICH INDICATE MAN'S CONDITION BY THE CHARACTER OF HIS STONE AND OTHER IMPLEMENTS.
NAMES OF THE PERIODS OR STAGES IN MAN'S ADVANCEMENT IN CULTURE AND SKILL
AGE OF THE LATEST, OR PLEISTOCENE PERIOD OF THE EARTH; ACCORDING TO PROF. A. PENCK.
MAMMOTH HORSE OF THE CAVE PERIOD REINDEER CAVE BEAR SPOTTED HYENA. WOOLLY RHINOCEROS.
Upper Quaternary.
Brick Earth
Ergeron
Eolian (wind) Deposits
NEOLITHIC: or Age of Polished Stone Implements
LOWER MAGDALENIAN
SOLUTREAN.
AURIGNACIAN
MOUSTERIAN.
UPPER ACHEULIAN.
LOWER ACHEULIAN
CHELLEAN.
STREPYAN.
MESVINIAN
MAFFLEAN
UPPER PALÆOLITHIC: or Age of Rough Stone and Bone Implements, Cave Frescoes, Carvings on Bone etc of the CAVE MAN.
Homo aurignacensis
NEANDERTHAL MAN and relatives, Krapina and Spy.
LOWER PALÆOLITHIC: or Age of Rude Stone Implements of the RIVER MAN.
EOLITHIC PERIOD or Age of Primitive Stone Implements.
Homo Heidelbergensis.
Pithecanthropus erectus.
MODERN AND NEOLITHIC, 8,000 Years
16,000 Years.
40,000 Years.
100,000 Years
400,000 Years.
750,000 Years.
MAMMOTH
Middle Quaternary
Gray Clay
Laminated Clay
Gray Clay
Potters' Earth
Fluvial Sands
Fluvial Sands
Flinty Layer
EARLY MAMMOTH. ETRUSCAN RHINOCEROS.
Lower Quaternary.
Sand and Potter's Earth
Flinty Layer
PRIMITIVE ELEPHANT.
Tertiary.

FIGURE 14. Diagram illustrating the character and relative age of Human Remains and the Quaternary Deposits in which they have been found. Adopted from McCurdy and Rulet.

regions once inhabited by cold climate fauna, one finds creatures whose structure and habits show them to have been denizens of warmer lands. There were climatic fluctuations with alternate advance and retreat of the ice. Modern geologists count four glacial epochs covering the

From Geikie "The Great Ice Age."

FIGURE 15. Europe during the Period of Maximum Glaciation.

period of the Pleistocene (see quaternary in diagram).[15] The causes of these great climatic fluctuations which brought about the ice ages are variously explained by geologists in accordance with three hypotheses.[16] In the course of these ice ages the glaciers pushed southward

[15] Lull, R. S.—"Glacial Man," *The Yale Review*, vol. 1, N. S., 1912, p. 377.

[16] See Chamberlain and Salisbury,—*Geology*, vol. iii, pp. 424-446.

FIGURE 16. An Alaskan Glacier sweeping down the Valleys and gouging out Rock and Stone. A similar situation existed in many parts of now habitable Europe during the Glacial Period.

gouging out valleys as they went and carried along with them masses of stone and rock fragments which were finally deposited along the melting front or lateral areas to the glacier.[17] Glacial streams flowed from under the slowly moving ice and carried fine detritus and sand many miles beyond the ice line, eventually depositing this material in deltas or flood plains and burying deep all small objects lying upon the surface.

The problem of the geographical center from which man migrated to finally populate the earth is still unsolved. Tradition has designated Central Asia as the place of dispersion. In Central Asia are found the remains of sand-buried cities so ancient that the very traditions concerning them have perished.[18] Moreover, the wild progenitors of our domestic animals—horses, cattle, sheep, goats, swine, dogs, camels, buffalo and fowl—had their habitations in Central Asia.

But there are other considerations. Geologists tell us that the land formation of the present continent of Europe underwent many changes in the later Tertiary and during the early Quaternary. Coincident with the glacial epochs there seem to have been alternating subsidences and upheavals of sections of the continent. There appears, however, to have been a strip of dry land fairly constant in its outline which extended from the valley of the Thames and the Rhine in northwestern Europe to the present island of Java at the southeast of Asia.[19] It is in this strip of territory that the most important discoveries of prehistoric man have been made.

[17] See figure 16.

[18] Lull, *op. cit.*, p. 377.

[19] See Keane, *op. cit.*, p. 54; Brinton, D. G.—*Races and Peoples*, 1890, pp. 86-89; Giddings, F. H.—*The Principles of Sociology*, 1909, pp. 214-216.

The first important discovery of the existence of an early example of mankind differing markedly from any living and of a decidedly lower type, was made in 1857 when part of a skull was found in a cave near Düsseldorf, Germany. The bones consisted of the upper portion of a cranium, remarkable for its flat retreating curve, the upper arm and thigh bones, a shoulder blade and collar bone, and rib fragments.[20] Figures 17 and 18 show the general contour of this Neanderthal skull. There was at first some difference of opinion as to its authenticity. Some naturalists maintained that it was a pathological specimen. But its normal character has since been fully demonstrated. Huxley conceived the Neanderthal man as short of stature but powerfully built, with strong, curiously curved thigh bones so constructed that the man must have walked with bended knees, possessing heavy brow ridges, heavy brutal jaw with receding chin. The artist's conception of the Neanderthal man is shown in the figures.[21] Although the Neanderthal man was of the small stature of 5 feet 3½ inches, he was probably a mighty hunter, able to contend with the rudest weapons against the rhinoceros, mammoth, cave bear, and other beasts. Since the discovery of this skull near Düsseldorf, other specimens of the same general type have come to light, serving to indicate how widespread was the Neanderthal race of men. In 1866, part of a jaw quite different from the typical jaw of to-day was found at La Naulette, Belgium; and in 1886, at Spy, Belgium, specimens were discovered in which the Neanderthal type of cranium was associated with the Naulette

[20] Keane, *op. cit.*, pp. 33-34, 145-146.

[21] See Frontispiece and figure **20.**

From Birkner, "Der Diluviale Mensch in Europa.

FIGURE 17. Top and Side view of Neanderthal Cranium.

type of jaw.[22] Finally, the most perfect specimen of the type was discovered by two competent observers at La Chapelle-aux-saints in 1908. These discoveries indicate the wide distribution of this primitive race.

In 1891 to 1892, the island of Java, itself a remnant

From Birkner, "Der Diluviale Mensch in Europa."

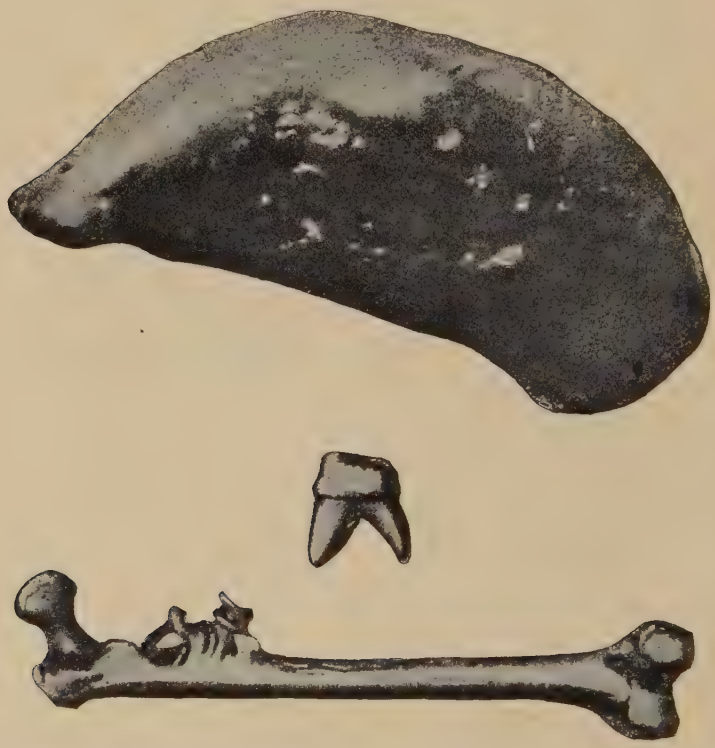
FIGURE 18. A reconstruction of the Neanderthal Type of Skull.

of an extended continental mass of remote time, gave up a relic of the nearest to an intermediate form in the series of human descent yet discovered. Here in the center of the island, Dr. Dubois found buried in pleistocene beds to the depth of about forty feet below the surface, the upper portion of a skull, a tooth, and a thigh bone.[23] It was fortunate that these most distinctive portions of the human frame should have been thus

[22] Keane, *op. cit.*, p. 146; and Lucas, F. A.—"The Antiquity of Man," *Century*, vol. 60, N. S., pp. 933-934.

[23] Keane, *op. cit.* p. 144.

preserved,[24] because from these specimens we are able to reconstruct the being and to say with assurance that his walk was erect in man-like posture, that he had mental power considerably above the ape, and that his



From Forrer, "Urgeschichte des Europäers."

FIGURE 19. The Cranium of the Pithecanthropus Erectus with Tooth and Thigh bone.

powers of articulate speech were somewhat limited.[25] This man stood halfway between the anthropoid and the most primitive of existing men. Years before, the German naturalist Haeckel, had applied the name Pithecanthropus, the ape-man, to a hypothetical form which would

[24] See figure 19.

[25] Lull, *op. cit.*, p. 378.

FIGURE 20. The Gorilla, Neanderthal Man and Modern Man compared.

walk erect, have a higher intellectual development than the man-like apes, but which would not yet possess articulate speech. The Javan form seemed to fulfil Haeckel's conception and has come to be known as the Pithecanthropus Erectus. The figures show the Pithe-

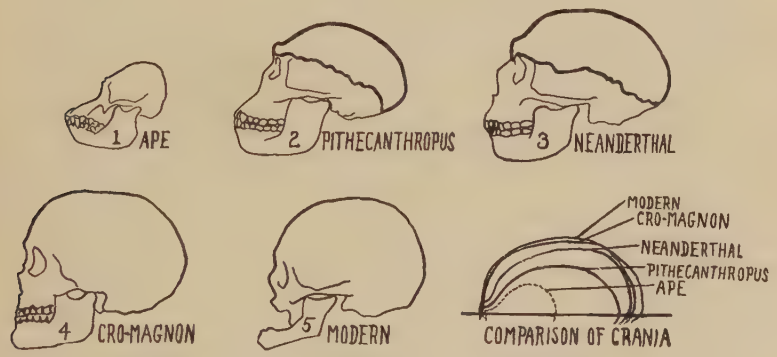


FIGURE 21. Comparison of Crania.

canthropus skull with its low arch. We may now compare the Pithecanthropus and Neanderthal crania with the higher Cro-Magnon type and with the skulls of an ape and modern man. This comparison is illustrated by figure 21, which indicates in a rough way how these discoveries have partially filled the gaps in our knowledge of the descent of man from earlier ancestral forms.

In 1907 a human jaw of great antiquity was discovered in the sands of the Mauer River near Heidelberg. This jaw lay in undisturbed stratified sand at the depth of about sixty-nine feet from the summit of the deposit.[26] It is very different from that of the modern man, being wide, low, massive, and devoid of a chin, features in

[26] See figure 22.

which it resembles the jaw of an ape.[27] Yet the teeth are typically human in arrangement and character, relatively small when contrasted with the massive support-

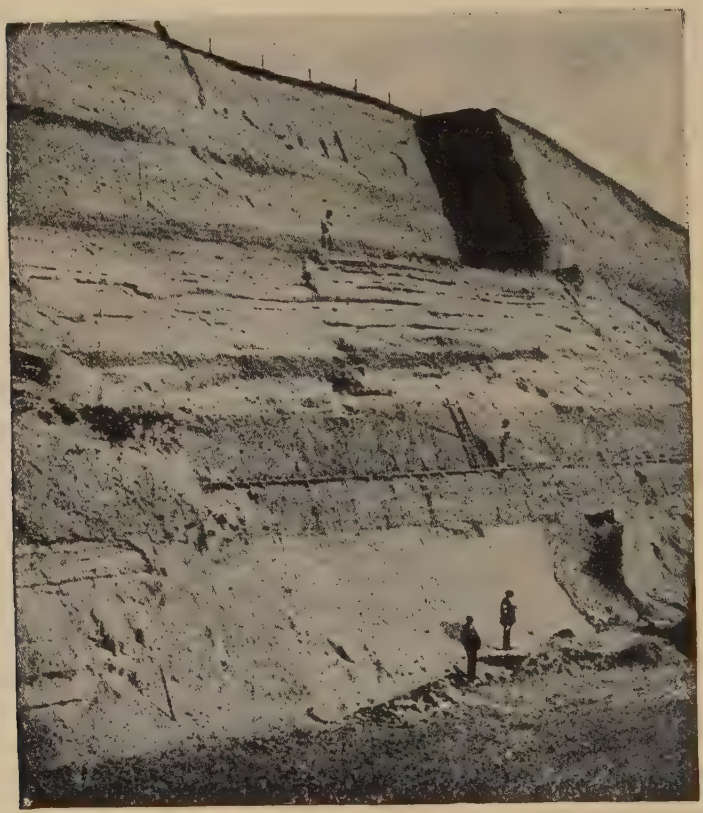


FIGURE 22. Sand-pit at Maure, near Heidelberg, where the Prehistoric Jaw was found.

ing bone, but actually large when contrasted with the modern man. The features are so distinctive that the discoverer, Dr. Schoetensack, considers the specimen as representing a distinct species of man. Lull finds in this important specimen an admirable illustration of the

[27] See figure 23.

law of Haeckel wherein the life cycle of the individual is shown to recapitulate in vastly briefer form the evolutionary history of the race. This is borne out by the fact that the teeth of the Heidelberg man are in their stage of development comparable to those of a youth of

FIGURE 23. Comparison of Jaw of Modern Man with Jaw of Heidelberg Man and Chimpanzee.

fourteen years or less, while their degree of wear indicates a fully attained manhood. Thus the Heidelberg man, a full adult for his time and generation, typifies none the less the youth of humanity.[28]

During the year 1912, a series of fragments of a human skull and a jaw bone were found associated with eolithic implements and the bones of extinct mammals in pleistocene deposits on a plateau 80 feet above the river bed at Piltdown, Fletching, Sussex, England. This discovery was made by Mr. Charles Dawson, and Dr. A. S. Woodward. The remains were of great importance because while the cranium was typically human, its cubical capacity was relatively small, about four-fifths that of the average European skull and twice that of the highest ape. The jaw was similar to the Heidelberg jaw although somewhat less massive, but the chin was even more negative than the Heidelberg chin. There is a controversy over whether the jaw is that of a man or of an ancient species

[28] Lull, *op. cit.*, p. 380.

From "L'Anthropologie."

FIGURE 24. Eolithic Implements.

of chimpanzee. Most authorities agree on the latter. This decision means that the Piltdown man is not as ancient as was first supposed but lived in the third interglacial time.

Other skulls and bone parts of prehistoric man have been found and are preserved in museums, but the specimens described are sufficient to illustrate the type of evidence they constitute. The available materials for the study of prehistoric man, besides his own remains, are his

[28a] Osborn, H. F.,—*Men of the Old Stone Age*, 2nd ed., 1916, p. 512.

From "L'Anthropologie."

FIGURE 25. The Grotto Chapelle-aux-Saints, where Remains of Prehistoric Men were found.

implements and his monuments or works of art. But we must remember that the earliest men left no archeological remains; indeed, "They had not advanced beyond the use of sticks and unchipped stones. . . . If no paleolithic remains earlier than the late quaternary period are found, it does not follow that man did not exist until the late quaternary. On the contrary, it is certain that, if flints were then chipped by men, earlier men had lived, who had not thought of chipping flints."[29]

The implements form a valuable part of our evidence because they are most numerous and widespread, and occur under conditions which afford the best proof of their antiquity. When we find chipped stone implements buried beneath the drift and undisturbed boulder clay which some glacier gouged out of the valley wall and piled up hundreds and thousands of years ago, we must regard the age of the glacial deposit as a measure of the age of the stone implements. Or, if an excavation in the floor of some ancient cave uncovers humanly fashioned stone tools under a thick stalagmite formation, we can only regard the undisturbed position of the implements as an indication of extreme age. Many primitive peoples to-day live upon shell-fish and leave the discarded shells near their dwellings. As time goes on the pile of shells accumulates. We call such heaps of shells, "Kitchen-Middens." If now, we find under such kitchen-middens among the shells, rude unpolished spear heads, these implements must be at least as old as the accumulation. In Tierra del Fuego (Elizabeth Island), there are kitchen-middens upon old beaches raised to considerable heights above the present sea-level, so ancient that the shells of which they are composed are ex-

[29] Giddings, *op. cit.*, p. 211.

tinct, or no longer the same as those in the surrounding waters.[30] But while the position in or under the drift which some glacier or glacial river has transported and finally deposited in ever accumulating layers, constitutes

From Birkner, "Der Diluviale Mensch in Europa."

FIGURE 26. Diagram of Cro-Magnon Grotto, where Remains of Prehistoric Men were found.

quite conclusive evidence, the position under stalagmite beds and kitchen-middens does not furnish as reliable proof of antiquity. The growth of stalagmite beds is irregular and depends upon conditions which are subject to some variation. In the case of the kitchen-midden, some shells are accumulated with great rapidity so that in a comparatively short time a considerable pile

[30] Keane, *op. cit.*, pp. 76-77, 96.

is made. With these warnings in mind we may proceed to the study of prehistoric man's tools.

From Forrer, "Urgeschichte des Europäers,"

FIGURE 27. Stone Implements of the early Paleolithic Period, Strépyan and Chellean.

Mr. Marett tells of a cave in Jersey, near the bay of St. Brelade, where anthropologists dug down through some twenty feet of clay and rock rubbish, probably carried there in the course of the last ice age by some glacial torrent, and discovered a prehistoric hearth with the large stones that had propped up the fire, and even some ashes. Bones were found in a heap of food-refuse,

which when examined proved to be the remains of the woolly rhinoceros, the reindeer, of two kinds of horses, of a wild ox, and of a deer. Thirteen human teeth were found in the food-heap. But Mr. Marett was unable to tell whether man or beast did the eating. These teeth

From Forrer, "Urgeschichte des Europäers."

FIGURE 28. Flint Implements of the Chellean Epoch.

were large, the kind that would go with an immensely powerful jaw, needing a massive brow-ridge to counteract the strain of the bite—in general the Neanderthal type, large brained perhaps, yet quite ape-like. The diners had also left their knives about,—flint implements chipped only on one side.[31]

The chipped flint implements of prehistoric man differ in such a way that we are able to recognize several stages

[31] Marett, R. R.—*Anthropology*, in *The Home University Library*, H. Holt & Co., 1912, p. 37.

in their development and even to assign the approximate years during which each was in vogue. The rough

From Birkner, "Der Diluviale Mensch in Europa."

FIGURE 29. Flint Implements of the Acheulian Epoch.

stone age and the polished stone age are the popular terms for the stages showing the most striking differences in appearance and workmanship. In figure 14, the most recent geologic epoch, the Quaternary, is divided into the lower, middle, and upper Quaternary, covering a period of some 750,000 years. It will be noticed that

in the fourth and fifth columns of the diagram there is a somewhat corresponding division, only under the more scientific name of the Eolithic period, the Lower Paleolithic period, the Upper Paleolithic period, and the Neolithic period. Keane associates the Paleolithic, or rough stone age, with the glacial period in Europe, and the Neolithic, or polished stone age, with the period since the ice ages.[32]

The Upper and Lower Paleolithic periods are different, in that the lower period is characterized by the evolution of the almond-shaped (amygdaloid) implement, which is unknown in the Eolithic period and rare in the Upper Paleolithic period. This is the typical river drift implement. The eolithic implements differ from the lower paleoliths in that they are extremely rough, so primitive, indeed, that some archeologists have hesitated to recognize them as the work of man. They are natural flakes, chips, or nodules of flint that bear traces of utilization and of having been fitted to the hand.[33]

Returning to the Lower Paleolithic period of our diagram, we find that there are "four well defined epochs based on both stratigraphy and the evolution of the almond-shaped implement." These are the Strépyan, Chellean, and the lower and upper Acheulian.[34] The fact that archeologists and anthropologists have found it necessary to distinguish between different types of implements shows how there was a gradual evolution of this very low and rudimentary culture to higher and higher stages. Each of these different periods extended over thousands of years. In the Chellean epoch, the almond-shaped im-

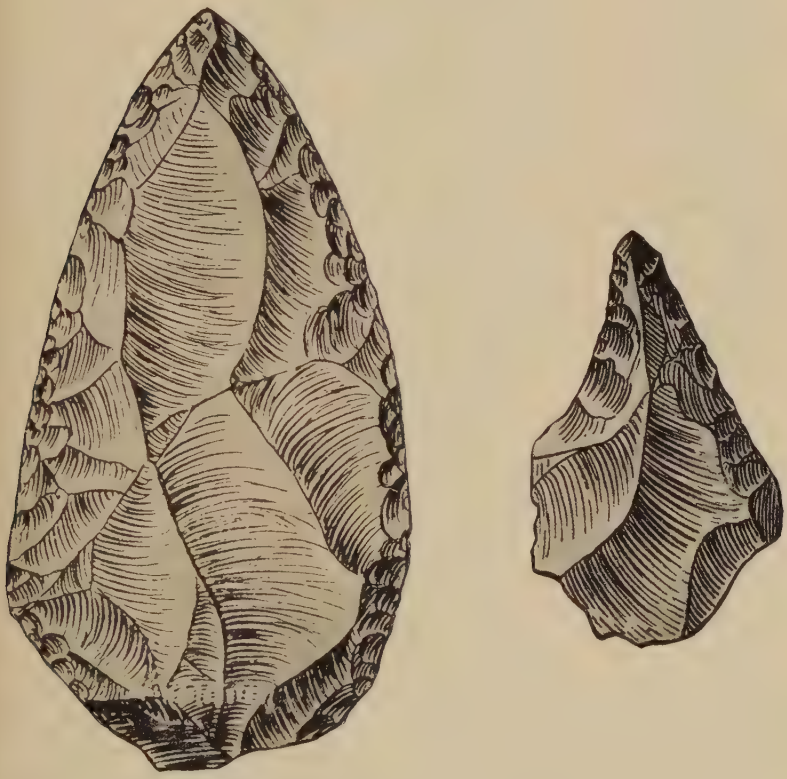
[32] Keane, *op. cit.*, pp. 54-55.

[33] See figure 24.

[34] See figures 27, 28 and 29.

FIGURE 30. A Man of the Stone Age.

plement is well defined, although the scars left by chipping the two faces are still large and somewhat irregular. It is the regularity and the fineness of the chipping which

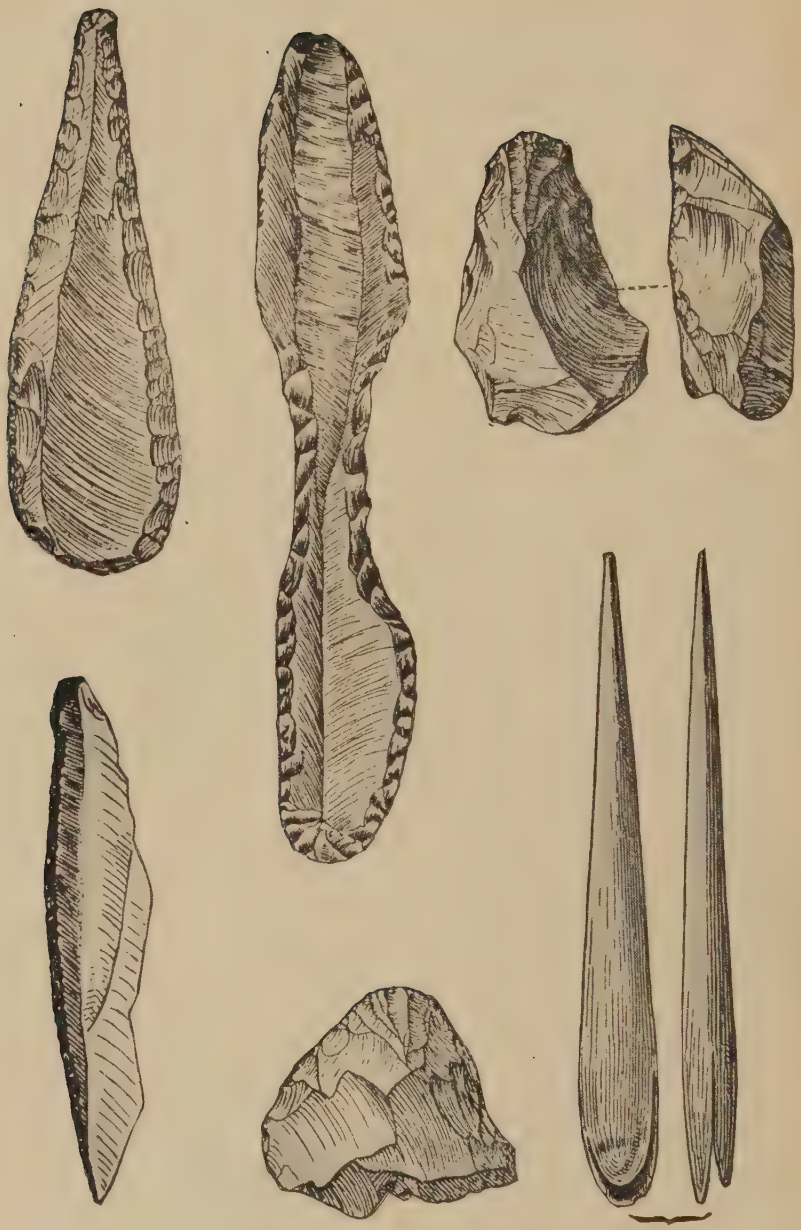


From Birkner, "Der Diluviale Mensch in Europa."

FIGURE 31. Flint Implements of the Mousterian Epoch.

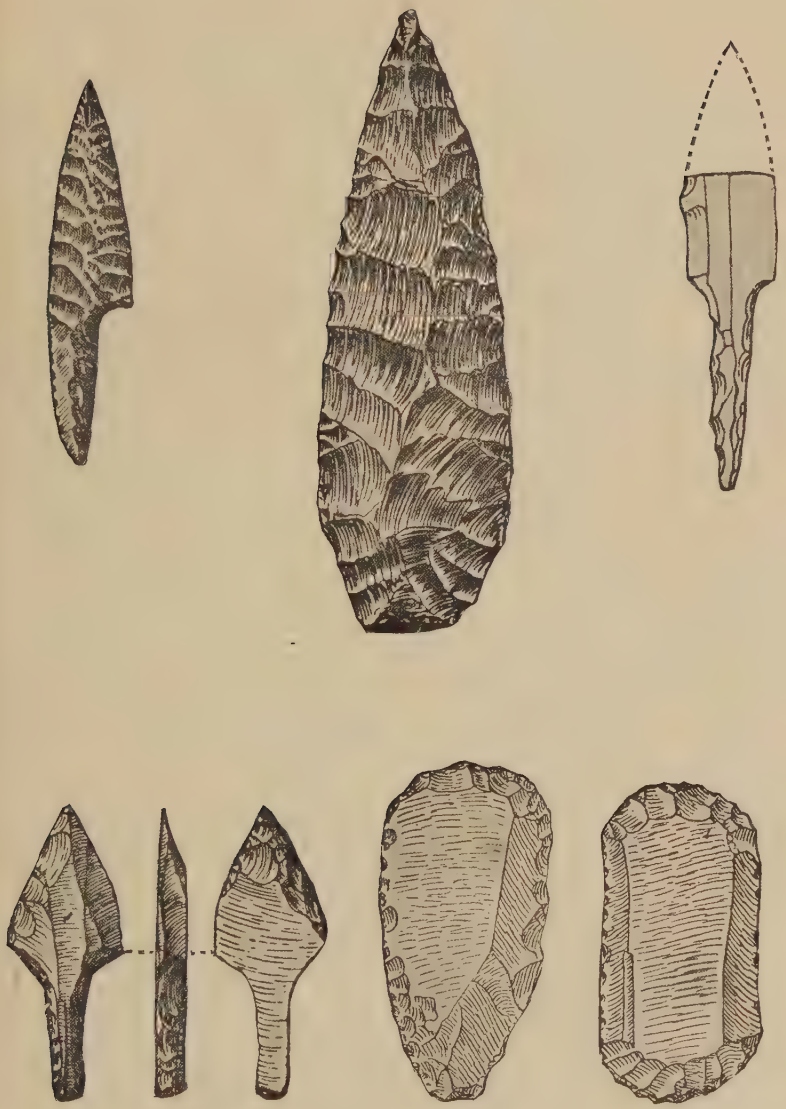
distinguishes the Acheulian from the Chellean. Indeed, it is "so skilfully done as virtually to eliminate the zigzag nature of the edge formed by the meeting of the two chipped faces."[35] The men of the old river drift must have had strong arms and skilful fingers, for it must have

[35] MacCurdy, G. G.—"The Caveman as Artist," *Century*, July, 1912, vol. lxxxiv., p. 440.



From Birkner, "Der Diluviale Mensch in Europa."

FIGURE 32. Flint Implements of the Aurignacian Epoch.



From Birkner, "Der Diluviale Mensch in Europa."

FIGURE 33. Implements of the Solutréan Epoch.

been difficult to chip a flint pebble along both faces till it took on a more or less symmetrical shape.

The Upper Paleolithic period is marked off partially by the fact that the flint implements are chipped on one side only. Furthermore, there is the gradual introduction of bone in the making of implements and the appearance of the first beginnings of art. The men of this period lived in caves and along the valley bottoms, for we find the remains of prehistoric man in the valley deposits and in caverns and rock-shelters. Four epochs are recognized, Mousterian, Aurignacian, Solutréan, and Magdalenian.[36] The Neanderthal man, short, powerful, and active, developed the industry of the Mousterian epoch in the direction of improved flint implements and even attempted some engraving, sculpture, and painting.[37] The Solutréan stone industry was highly developed and exemplified much skill in the art of chipping. The arrow point was shaped like a willow leaf with an improvement over some earlier forms by the introduction of a lateral notch at the base.[38] This art of stone chipping perfected in the Solutréan, does not seem to have been as important in the Magdalenian epoch.[39] The industrial life of this epoch is characterized by the use of bone, ivory, and reindeer horn in the making of barbed harpoons and spears. These bone implements are often engraved and carved to represent animals of prey.[40] This somewhat rude art reached a high state of development in the Magdalenian epoch.

In addition to these remains of the cave man we have others even more interesting: remains which go far to tell us of his trained powers of observation and skill of

[36] See figure 31.
[37] See figure 32.
[38] See figure 33.
[39] See figure 34.
[40] See figure 35.

eye and hand. The cavern must have been more than a place of safety from wild beasts and a shelter from storms; it must have been a place in which sedentary habits developed the first glimmerings of esthetic ideas, for we find upon the walls of these caves simple draw-

From Birkner, "Der Diluviale Mensch in Europa."

FIGURE 34. Stone Implements of the Magdalenian Epoch.

ings and elaborate color paintings of the rhinoceros, bison, and reindeer. Perhaps these pictures had religious significance. We do not know. Symbolic significance of some sort they undoubtedly did possess. In any event, their artists passed away, as did their traditions, ages before the civilizations of Babylon or Egypt began.

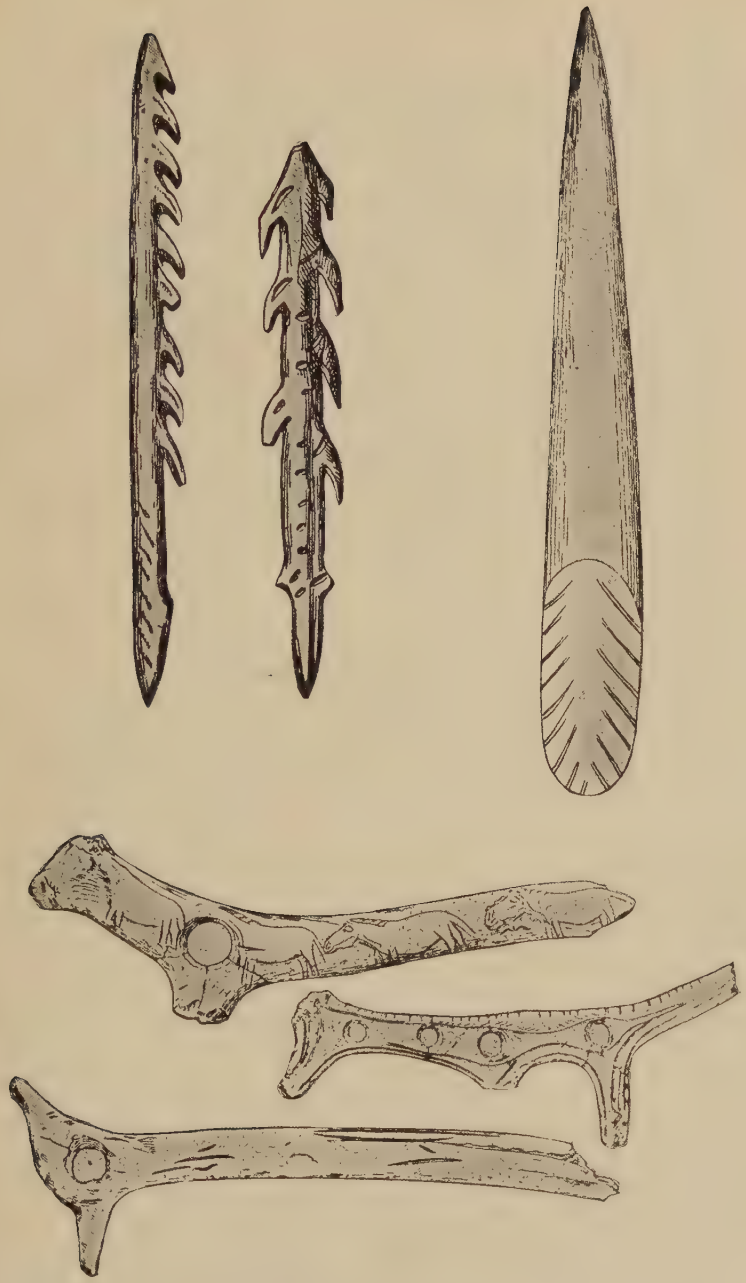
The map in figure 37 shows the location of prehistoric

caves in France, all of which are ornamented with paintings and drawings. Cavern painting passed through four stages. In the first stage the drawings were simply outlines done with a black or red crayon. In the second stage the first attempts at modeling by shading appear. These drawings are usually monochromatic silhouettes in black. The third phase of development shows an excessive use of color which weakens the effect of the modeling. Paleolithic painting reaches its zenith in the fourth stage when several warm colors are introduced to give realism and vigor to the picture. Although the surface upon which the painting is made is usually scraped and washed, spots are sometimes chosen which give the figures the appearance of a bas-relief. The colors used are brown, red, black, yellow and white.[41] The bison in figure 40 is done in warm sepia with bright burnt sienna running into the sepia and becoming darker. The art is generally remarkably realistic and the animals are often represented as in active motion.[42]

This cave art is the most striking achievement of paleolithic man. It suffered eclipse, however, with the passing of the fashion of cavern life; men began to devote their energies to other activities. One should keep in mind that the period of the cave men was, in general, a period in which the climate of Europe was extremely cold. Large sections of the northern part of the continent were under ice, and from the highlands of the southern part of the continent glaciers extended down into the valleys, giving rise to glacial streams. It was the age of the mammoth, reindeer, elk, hyena, of the wild horse, the chamois, and the goat. Men and animals must have been driven southward to a warmer zone by the

[41] See figures 38 and 39.

[42] See diagram in figure 41.



From Birkner, "Der Diluviale Mensch in Europa."

FIGURE 35. Bone Harpoons and Engravings on Bone of the Magdalenian Epoch.

From Forrer, "Urgeschichte des Europäers."

FIGURE 36. Aboriginal Man of the Mousterian Epoch. (Designed by Dr. R. Forrer and Leo Schnug).

climatic changes and the advancing ice sheet. With the tempering of the climate the ice sheet melted back, In its wake, men and animals again pressed north. It required centuries for these changes, and the memory and tradition of a northern habitation must have perished from the minds of these primitive folk. In the intervening centuries the old cave dwellings were partially submerged by glacial drift so that when the peoples moved north again and the old caverns were rediscovered, the remains of former habitation were buried deep below the accumulated drift. In this way, by a succes-

sion of migrations corresponding to climatic changes, remains of human habitations accumulated at different levels in the floor sands of these ancient caverns. We find at different levels implements, representing by the

After Cartailhac and Breuil.

FIGURE 37. Map showing the Location of Prehistoric Caves, all of them ornamented by Paintings and Drawings.

grade of their workmanship, various cultural stages often corresponding to stratigraphical sequence.

In some sections of the continent there is a break in the continuity of cultural development from the upper paleolithic or rough stone age to the neolithic or polished stone age. Keane says that the elements of their respective cultures differ so widely as almost to suggest some violent dislocation or sudden cataclysm.[43] The consequence is a prevailing impression that there was an abrupt transition from the rude culture of the rough stone men to the more developed culture of the polished stone men. Notably in Britain there seems to have been

[43] Keane, *op. cit.*, p. 110.

a complete gap between the river-drift culture and the neolithic culture. Future discoveries may show that the transition from the rough stone age was not as abrupt as was first supposed. At any rate, with the glacial evidence at hand, we are quite justified in the theory that out of the intensified struggle for existence consequent upon the overcrowding of peoples in the somewhat lim-

After Capitan and Breuil.

FIGURE 38. Red Drawing of a Rhinoceros, from Font-de-Gaume.

ited territory south of the ice front, only the most durable cultural elements in connection with higher mental types of men survived. Isolation never develops the finer sensibilities and qualities which come with the mingling of peoples. Sparse and widely separated groups of men such as must have existed during the inter-glacial ages of the Paleolithic period, lacked the conditions for the development of high culture. When the cold increased and the ice once again pushed southward, these primitive men were exterminated or else slowly migrated to more temperate climates. Here the peoples were more in touch with one another and population was relatively dense. Under these conditions the struggle for food and space was more acute. The dull

From reproduction by Abbe Breuil of the original wall painting in colors.

FIGURE 39. A Charging Boar (see upper right-hand figure in diagram).

From a reproduction by the Abbe Breuil of the original drawing in colors.

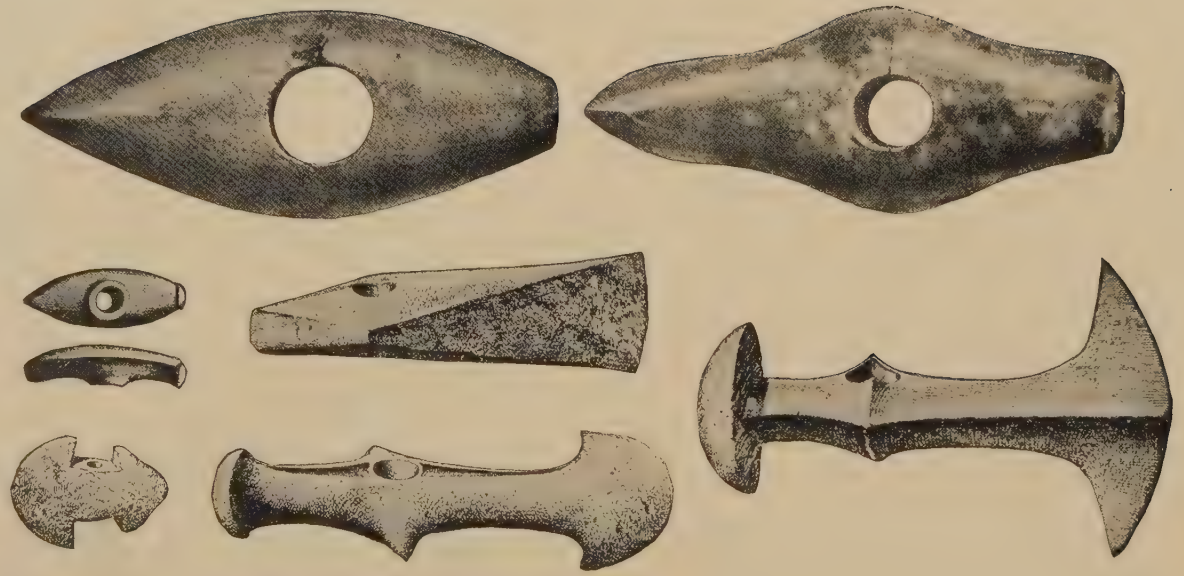
FIGURE 40. A Bison at bay (see figure second row at extreme right of diagram). Done in warm sepia with bright burnt sienna running into sepia and becoming darker.

After Cartailhac and Breuil.

FIGURE 41. Diagram of Frescoes on the Ceiling of the Cavern of Altamira.

and slow were at a disadvantage with the clever and the quick. Docility of disposition, a readiness to take up new methods of food getting, and better appreciation of the value of persistent activity along peaceful rather than warlike lines must have counted for much. The wholesale weeding out of the less vigorous physically, of the sluggish intellectually, and, in general, of those least adapted to the conditions which made for progress, meant the survival and perpetuation of better racial stock. But the process of selection operated to favor certain lasting cultural elements as well as to exterminate tendencies in unprogressive directions. The total consequence was that from this seething riot of new experiences and the constant testing of diverse physical, intellectual, and cultural elements, there emerged a new and higher culture,—the neolithic.

The neolithic men had learned the lesson of patience; they had domesticated the horse, ox, pig, sheep, goat and dog. The men of the rough stone ages had failed to



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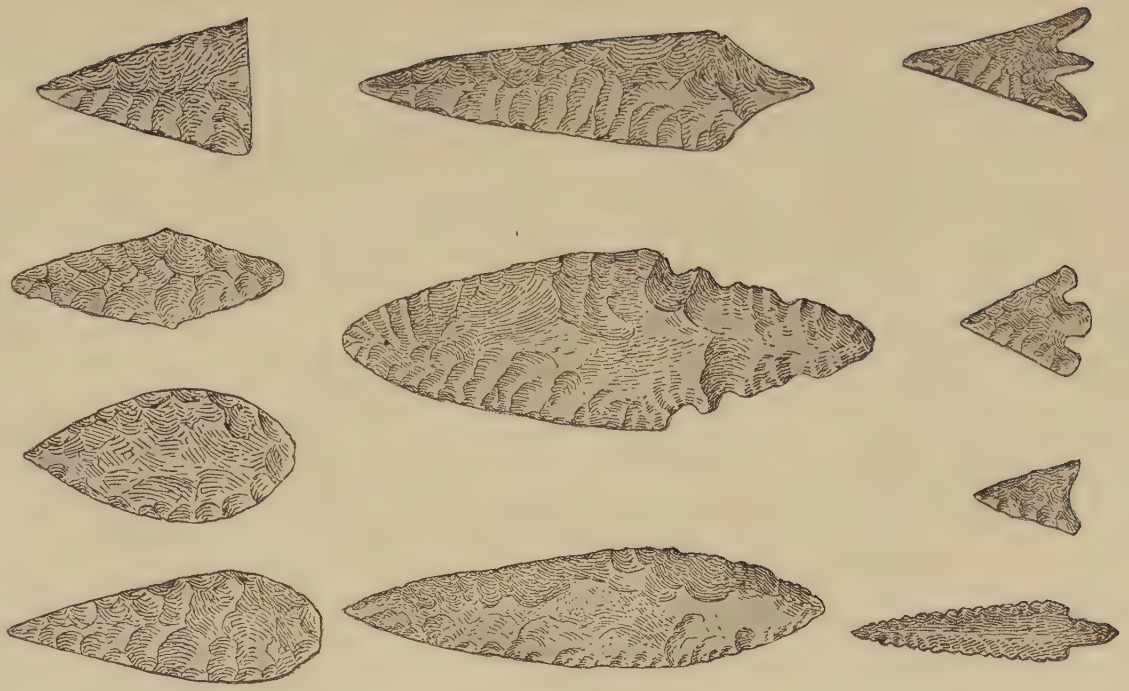


From Déchelette, "Manuel D'Archéologie Préhistorique."

FIGURE 42. Neolithic Implements.

make this very important step in progress. Fire was generally known and could be artificially kindled. The food, which had been mainly uncooked vegetable and the raw flesh of fish and animal in the paleolithic culture, was in this new period largely cooked and obtained by

From Forrer, "Urgeschichte des Europäers."

FIGURE 43. Neolithic Pottery.

stock breeding and tillage as well as by fishing and the chase. This was a most important gain, for it meant a larger and more certain food supply. And the food supply is always a serious problem among primitive peoples. The men of the polished stone age made implements of diverse type, not rough and irregular like their predecessors, but ground smooth and shapely.[44] They were also skilled in spinning and weaving and had considerable success in making pottery.[45] All these arts were foreign to the men of the rough stone ages. Neolithic men left imposing monuments in the form of gigantic upright stones, reminiscent of early religious rites

[44] See figure 42.

[45] See figure 43.

From Forrer, "Urgeschichte des Europäers."

FIGURE 44. Neolithic Monuments of Stonehenge.

and ceremonies so ancient that even the traditions of their worship have been forgotten.[46] In many parts of

From Déchelette, "Manuel D'Archéologie Préhistorique."

FIGURE 45. Neolithic Monuments, a "Menir."

Britain they are called "Druid's Altars" and are popularly associated with Druidical rites.[47] Besides the monolithic type, there is the polylithic or cell type of monument, associated with burial and ancestor-worship.

[46] See figures 44 and 45.

[47] Keane, *op. cit.*, p. 125.

The tomb is composed of several megaliths—one for the floor, others upright or on edge, supporting a horizontal slab which covers the whole space enclosed.[48] Some of these sepulchral chambers are covered with great piles

From Déchelette, "Manuel D'Archéologie Préhistorique."

FIGURE 46. Neolithic Monuments, a "Dolmen."

of stones or earth. These monuments are known as barrows. This was the period when the Swiss lake dwellings were constructed.[49] The prehistoric monuments of the New World are more imposing than these barrows of the Old World.[50] The ruins of palaces, temples, and aqueducts of the ancient Peruvians and the similar colossal constructions of the ancient inhabitants of Bolivia and Mexico, surpass most of the other monumental remains of prehistoric man. But the men of the Neolithic

[48] See figure 46.

[49] Keane, *op. cit.*, p. 121, Lubbock, *Pre-Historic Times*, ch. vi.

[50] See figure 47.

From Bulletin, "Bureau of American Ethnology."

FIGURE 47. Neolithic Monuments in the New World. A Cliff Palace of the Cliff Dwellers of Colorado.

period could do more than build stone monuments and fashion polished stone implements; they understood something of rude mining processes, for they left articles of bronze and iron.[51] The existence of ornaments, arms and cutting implements of all kinds, such as axes, knives and the handles of swords dating back to the Neolithic period, has led Lubbock to divide the prehistoric period into four epochs: the Drift Age (rough stone age), the Polished Stone Age, the Bronze Age, and the Iron Age.

In the course of the discussion in this chapter we have attempted to present some of the most authentic and important evidence which scientists have gathered to explain the origin and the great antiquity of man. In the chapters immediately following, we must concern ourselves with the even more difficult problem of accounting for man's remarkable mental development which surpasses that of any other living creature. This really brings us to the study of Social Evolution, for modern students of mankind have come to believe more and more completely in the importance of the social factor in the evolution of higher animal types.

SUPPLEMENTARY READINGS.

Brinton, D. G.—*Races and Peoples.*
Darwin, C.—*The Descent of Man.*
Deniker, J.—*The Races of Man.*
Duckworth, W. L. H.—*Prehistoric Man.*
Giddings, F. H.—*The Principles of Sociology.*
Keane, A. H.—*Ethnology.*
Lubbock, J. (Lord Avebury)—*Pre-Historic Times.*
Marett, R. R.—*Anthropology* (Home University Series).
Metcalf, M. M.—*Organic Evolution.*
Osborn, H. F.—*Men of the Old Stone Age.*
Romanes, G. J.—*Darwin and After Darwin,* I *The Darwinian Theory.*
Tylor, E. B.—*Anthropology.*

[51] See figure 42.

IV

ASSOCIATION

The origin of the mental faculties and moral nature of mankind is to be explained by the socializing influences of group life. In the preceding chapters we have examined the doctrine of descent to determine whether man's physical form was related to other species of animal life. We saw that there was no scientific reason for separating man from the rest of the animal kingdom as regards the processes of evolution. "There is no reason to doubt the continuity of animal and human society." [1] From the strictly sociological point of view, the student of social evolution accepts the conclusions of biology and geology and begins his investigation with the inquiry as to whether the earliest men were isolated pairs, descended perhaps from a single pair, or whether the transition from the animal to the human state was made by entire social groups. Professor Giddings holds that there is no evidence whatsoever for the theory of numerous isolated pairs. Indeed, there is much evidence to the contrary which leads us to believe that the transition from the animal to the human state was made under the socializing influences of group life.[2]

Throughout the ages before man was differentiated, certain animals lived in groups and were becoming accustomed to the advantages afforded by association.

[1] Giddings, F. H.—*The Principles of Sociology*, p. 208. [2] *Ibid.*

Life in societies is the most powerful weapon in the struggle for life. Horses, although badly organized on the whole for resisting their enemies and the adverse conditions of climate, would soon have been exterminated were it not for their sociable spirit. The wolf and the bear cannot capture a horse unless the animal becomes detached from the herd. If a beast of prey approaches, several studs unite at once and repulse the beast, sometimes even chasing it. When a snowstorm rages, studs crowd together and the warmth of their several bodies keeps them from freezing. If the group disperses, the horses perish and the survivors are found after the storm, half dying from fatigue.[3] The common ant thrives without having any of the protective features which animals living in isolated life possess. Its color renders it conspicuous and its sting is not formidable. Yet ants are dreaded by most stronger insects. Their most important source of strength consists in the maintenance of a highly coöperative group life. The animals which know best how to combine have the greatest chances for further evolution, even though they may be inferior to others in each of the faculties enumerated by Darwin and Wallace, save in the intellectual faculty.[4] This last is generally admitted to be the most powerful aid in the struggle for existence. But the intellectual faculty is eminently a social faculty. "Language, imitation, and accumulated experience are so many elements of growing intelligence of which the unsociable animal is deprived." For this reason we find at the top of each class of animals, those which combine the greatest sociability with the highest development of intelligence. "The fittest are thus the most sociable animals, and sociability appears as the chief

[3] Kropotkin, P.—*Mutual Aid*, 1904, p. 47. [4] *Ibid.*

factor of evolution, both directly, by securing the well-being of the species while diminishing the waste of energy, and indirectly, by favoring the growth of intelligence."[5]

Thus it was that thousands of years before man appeared, association was preparing the way for human society. Association was a chief cause of the development of intelligence and of the power to coöperate. Moreover, social life developed with a progressive weeding out of unsocial creatures which thereby became a more easy prey to physical forces and living enemies.[6] Association not only endowed certain species with the mental capacity that was eventually to make one of them the master, but it developed the social instincts of all the others to such a degree that they could become useful coöperators with mankind. The teachable disposition acquired by certain animals from their age long experience of social life made domestication a possibility. Later we shall see that domesticated animals made possible civilization. In this way the enormous importance of domestication is apparent.

The savage peoples of the present day live in groups, and all the remains of prehistoric men show that they too lived in groups. There is no reason to believe that the anthropoid precursor of man was an unsocial animal. Indeed, the mental differences that mark men off from other creatures are those that are created by social discourse. Speech in particular, an attainment that has given man his preëminence among other animals, is distinctly a social creation. Since association and sociability have been such all-important factors in the mental evolution of mankind we shall consider the advantages that accrue from social life.

[5] *Ibid.*

[6] Giddings, *op. cit.*, pp. 204-207.

Association immediately affects selection and survival. Life in groups affords protection from extremes of climate and from ferocious animal enemies. In the snow storm, sheep press together and keep warm. Certain animals move in herds and flocks, so that in case of danger they are able to stand off the enemy. The isolated animal unable to sustain bodily warmth in the face of the blizzard, succumbs. A fierce enemy is more sure to exterminate the single individual. In this way it happens that sociability has a definite survival value, for the individual accustomed to group life is selected to survive, while the individual living an isolated existence lacks the advantage of coöperation and is more often destroyed.

Life in societies insures a larger and a more certain food supply. Social animals hunt in packs, when their combined strength is often able to vanquish prey that one of them could not overcome singlehanded. Moreover, food secured by one of the pack is often shared with the other members, while an unsocial animal would be driven from the feast.

But the great effect of association and group life upon selection is found in the fact that through the advantages of protection and food supply gained by coöperation and mutual aid, the average social animal has a better chance to reach maturity and have offspring. Under the safer conditions of group life, more progeny can reach maturity than is possible in the uncertain state of isolated families. In a previous chapter we saw that survival meant more than continuance of mere individual life: it meant the perpetuation of the race by the rearing of progeny. Survival in this sense means that certain advantageous characteristics possessed by the parents, will

not be lost to the race but will probably appear in the offspring and form the basis for new gains. And so, in the course of the struggle for existence, those animals that tended to vary in the direction of a sociable and docile disposition, would, other things being equal, have a better chance to survive over their isolated competitors, and surviving, would tend to transmit to their progeny by the laws of heredity those same social characteristics. In this way, traits must have been constantly scrutinized by natural selection and the social characteristics picked out and given the stamp of approval. Hence, long before the differentiation of man, animals were developing that social nature which is now the chief characteristic of the human species. During the ages that must have elapsed in the transition from anthropoid to man the process of socialization continued to do its work, selecting the sociable and excluding or exterminating the unsocial.

Association reacted powerfully upon variation, for social life furnished safety from enemies and permanence of food supply, making possible the birth and nurture of a larger number of offspring, also permitting new variations to arise and to become definite characteristics of the group. Under conditions of comparative security, individuals possessing variations in the direction of tolerance, sympathy, and compassion, were likely to be favored with longer life and more numerous progeny than individuals without these traits. These refinements would have hindered the single individual practising the ruthless cruelty demanded by the more rigorous conditions of a lonely state. In short, refined sensibilities constitute qualities disadvantageous in isolated individuals, but which, under the improved conditions of life in societies, favor survival. Hence association, through

the comparative security it afforded, is directly responsible for the preservation and perpetuation of such characters as toleration, sympathy, and compassion,—among the highest human qualities. Besides the preservation of individuals possessing these eminently desirable qualities, life in societies assured the appearance of progressive variations along the same line. This was secured by virtue of the fact that more numerous offspring means an increased chance for the appearance of a new germinal variation. With many progeny surviving, it is reasonably certain that some individuals will have innate capacities superior to those generally possessed by the former generation. In this way, association tended to cumulate biological gains.

In group life the gain of one member through imitation became the gain of the group. A new way to perform some old function, greater dexterity attained by one, a surer method for securing food, were gains quickly imitated by other members of the group. In this manner all received benefit from the discovery of one. Participation in the common cause, sharing in the general benefit, operated to modify the more plastic individuals and developed sympathy and toleration. Imitation of those who were of a naturally sympathetic and reasonable disposition tended to repress excessive cruelty and intolerance, and gave that unity and coherence which made cooperation both practicable and successful. In this way the social process cumulated gains, and group experience came to be more ordered and varied.

Combined action in hunting, fishing, and defense, exercised a constant discipline over antipathies and sympathies, over powers of discrimination and coördination. Adaptabilities were consciously trained by coöperation.

These modified activities reacted upon nerve and brain. "Through nerve and brain they reacted further, physiologically and morphologically, upon the whole organism. By every advance in association the bodily organism was necessarily modified in some degree to correspond to the development of feeling and intelligence."[7] Out of discipline for antipathies and sympathies new variations arose and were encouraged; that is, when they appeared as specific traits in an individual, that individual was not crushed with disapproval and contempt, but was allowed to live and so transmit these qualities.

By looking closer at the process of association we are able to see more clearly the course of action through which the brute mind was gradually converted into the human intellect. From what has already been said of life in society one may readily see that in group life the relations of an individual to his surroundings and to his companions became increasingly complex. And yet the simplest psychophysical process that takes place in the nervous system is the response of nervous matter to an external stimulus.[8] When any sense organ is stimulated a twofold result normally follows: one effect is a sensation, an elementary fact of consciousness; the other effect is a muscular movement called a reflex. We shall follow the usage of Professor Giddings and denote by the term, "response to stimulus," both aspects of the process. It is this phenomenon of stimulation and response that leads us to the very heart of the matter.

There are roughly two kinds of stimuli. Original or primary stimuli include: fellow beings, the concrete objects of nature, events of nature,—in fact, most external

[7] *Ibid.*, p. 200.

[8] Giddings, F. H.—*Descriptive and Historical Sociology*, 1906, p. 124.

objects or occurrences. For example, if one should attempt to descend from a hill by a steep and slippery path and should slip and fall, the natural effort to regain one's balance would illustrate what is meant by a reflex action, and the sensation is illustrated by the surprise or pain of the fall. Derived or secondary stimuli are ideas and emotions, complex products of response. They are products not only of the activity of the individual nervous system, but also in great measure of activities of other animate individuals. In the instance given, the fact of losing one's balance would be the primary stimulus which produced the sensation of surprise and the reflex action of attempting to regain balance, whereas if the individual should again pass that way he would tend to retain a distinct impression of the consequences of following that steep path and this would lead him to descend from the hill by another path. Here the unpleasant idea of the fall was a secondary or derived stimulus which caused a reaction in the form of going down the hill by another way. This process of stimulation and response, relatively simple with the isolated individual, becomes exceedingly complicated in social relations. Where individuals live in groups, fellow beings become the sources of primary stimuli, and even the ideas of companions, especially if expressed by sign or language, form an increasingly important source of secondary stimuli. "The ultimate motive of voluntary activity, both mental and muscular, is the persistent desire of consciousness to be clear and painless, and, if possible, pleasurable. Consciousness is intolerant of obscurity, perplexity, obstruction, and suffering."[9] It therefore follows that consciousness endeavors to attain

[9] *Ibid.*, pp. 125-126.

painless clearness, or positive pleasure, with least difficulty. The line of least effort is sought out. Activities proceed from the known to the unknown, and from the tried to the untried. Consciousness thus seeks to avoid those stimuli which experience has found to be followed by painful sensations.

In associated life, individuals stimulate one another by acts and signs. In this way the phenomena of interstimulation and response arise. But different individuals respond differently to the same or similar stimuli. These varied responses are unlike in kind, in degree, and in completeness. From this unlike-response spring the innumerable phenomena of antagonism, conflict, rivalry, and competition. But we often observe that fellow beings are so constituted that they respond in like ways to the same stimulus. From this like-response develop the phenomena of agreement and coöperation.[10] Those who respond similarly to an appeal to arms become the warriors. Those who are quick to seize upon new opportunities become leaders. Any who, because of poor digestions or epileptic taint, dream dreams and fall into fits, become the medicine-men of the tribe and its religious leaders. Thus the process of interstimulation and response throws together those individuals who are most alike, and sorts out for contempt or disapproval all who vary too far from the accustomed mode of response. There is a process of differentiation, whereby, on the basis of their different responses, individuals are grouped; those who respond alike are drawn together, are integrated, while those whose reaction varies greatly from the average are regarded as uncongenial, are persecuted or driven from the group. In this way the mem-

[10] *Ibid.*, p. 128.

bers of any society tend to become more and more alike; social types are created and extreme variation from the approved type is discouraged or even punished. Thus there evolves out of the maturing experience of interstimulation and response a social and often highly conscious selection, which tends to preserve the appreciated type and operates to expel or exterminate the extreme variate.

The growing volume of stimuli to intellectual development and the constantly increasing selective value of mind, tended to bring internal adaptations in the form of more complex organization of the brain and nervous system. "A slower development of the individual and a longer infancy necessarily resulted. The prolongation of infancy, in its turn, must necessarily have effected great changes in anatomy and physiology. A long period of helplessness, by delaying the use of arms and legs in ancestral ways, must have contributed to those changes that resulted in the upright position and the specialized use of the fore limbs. A relatively long period of lactation, with inability to use food requiring strength of jaw, must have changed the facial angle and the expression of the countenance." [11]

Mutual aid attains its highest development in the animal kingdom among the social apes and monkeys. Cooperation must have been further developed among the cave men, for we have proofs of their successful warfare against such imposing antagonists as the mammoth and the cave bear. But there are forms of coöperation other than united action against enemies. There is cooperation in seeking amusement and diversion. Play tends to become organized in games and festivities. In

[11] Giddings, *Principles*, p. 229; see note at chapter end.

play and festivity signs and gestures exercise an important rôle. There is the constant desire to share with one's fellows the excitement of certain novel sensations, the desire to communicate emotions of joy or surprise. If we can explain how the signs of ideas became objects of contemplation, movable types, names, we can understand how gesture language was converted into speech. One of the most interesting explanations of the origin of articulate speech was advanced some years ago by Dr. Donovan. He says, "The origin of speech was only possible through the aid of the psychological machinery which belonged to musical pleasure." [12] The argument runs that the communal spirit finds its first and rudest expression in bodily play excitement. In its earliest discovered forms this rude expression has become the custom of festal celebration, the constant elements of which are bodily play movements in imitation of actions, rhythmic beating, some approach to song, and the social interest. Professor Giddings says, "The argument, therefore, is well founded, that under the mental exaltation of such occasions, rather than under less stimulating circumstances, attention would be fixed upon vocal sounds used as signs, and the conclusion is warranted that it was under the stimulation of social excitement that signs were first distinguished in thought from the things signified, and so conventionalized as names, the movable types of speech." [13]

The attainment of articulate speech made human nature, with all its richness of content and refinement of feeling. As the consequence of group life and experi-

[12] Donovan, "The Festal Origin of Human Speech," *Mind*, vol. xvi, no. 3, Oct., 1891, p. 499.

[13] Giddings, *op. cit.*, p. 225.

ence, speech reacted upon association. It definitely marked off primitive man from all other species. It became the distinguishing character of the Hominidæ. Men became increasingly aware of their degrees of mental and practical resemblance. Through the new channels of communication opened up by the attainment of articulate speech, men became conscious of modes of like-response which formed the basis of resemblances and differences. This subjective phenomenon consisting of various degrees and modes of awareness on the part of resembling individuals that they are alike, is what Professor Giddings calls, *"Consciousness of Kind."* [14] There are distinct levels of *consciousness of kind,* all the way from the incipient form of *organic sympathy* among animals, through the various modes of *perception of resemblance, reflective sympathy, affection,* and the *desire for recognition,* to that completeness of refined feeling and ripeness of experience,—the human consciousness of kind.

The possession of articulate speech was for primitive man a boon beyond estimation. Verbal communication gave unity to the early group life which was of immense advantage in the struggle with other species. Speech enabled the individual to draw upon the experience of the race whenever his own resources seemed inadequate for an ordeal. "A word is a vehicle, a boat floating down from the past, laden with the thought of men we never saw; and in coming to understand it we enter not only into the minds of our contemporaries, but into the general mind of humanity continuous through time." [15] Language, as the recorded stream of race experience,

[14] Giddings, *Descriptive and Historical Sociology,* pp. 184, 275.
[15] Cooley, C. H.—*Social Organization,* 1912, p. 69.

grows by the contributions of many humble inventors, every man, possibly, altering the heritage in proportion as he puts his individuality into his speech. "Variations of idea are preserved in words or other symbols, and so stored up in a continuing whole, constantly growing in bulk and diversity, which is, as we have seen, nothing less than the outside or sensible embodiment of human thought, in which every particular mind lives and grows, drawing from it the material of its own life, and contributing to it whatever higher product it may make out of that material."[16] Professor Cooley compares language with the path and compass which directs the uncertain progress of the traveler in the wilderness, because in language the mind finds its experience foreseen, mapped out and interpreted by all the wisdom of the past.[17] The supremely social phase of the relation of the individual to language, consists in development of the individual mind not as a separate growth, but rather as a differentiation within the general mind.[18]

This principle of natural selection which we have used to explain the survival of certain individuals and the extermination of others, also explains, perhaps, why one social group outlives another. In the struggle between groups the fitter group tends to survive, as in the individual struggle the individual best fitted to its surroundings was most likely to live. The progress of the military art has been the most conspicuous thing in human history. "The cause of this military growth is very plain. The strongest nation has always been conquering the weaker; sometimes subduing it, but always prevailing over it. Every intellectual gain, so to speak, that a nation possessed was in earliest times made use of—

[16] *Ibid.* [17] *Ibid.*, p. 70. [18] *Ibid.*, p. 71.

was *invested* and taken out—in war; all else perished. Each nation tried constantly to be the stronger, and so made or copied the best weapons; by conscious and unconscious imitation each nation formed a type of character suitable to war and conquest."[19] Because of this continual effort to become more military the art of war has constantly improved.

If the stronger group, or nation, to take the term that Walter Bagehot uses, is the one that invariably survives, in what does this superior strength consist? Many things undoubtedly contribute to maintain the strength of the group. Probably the most important advantage in group struggle is unity and coherence. Galton had observed years ago that the tamest cattle, those that seldom ran away, that kept the flock together, and those which led them homeward, would live longer than the irreclaimably wild members of the flock.[20] This process of selection also operated to preserve the tamest groups of primitive men. The tamest were those who were unified by bonds of custom. "The first thing to acquire is, if I may so express it, the *legal fibre;* a polity first—what sort of a polity is immaterial; a law first—what kind of a law is secondary; a person or set of persons to pay deference to—though who he is, or they are, by comparison scarcely signifies."[21] What made one primitive group stronger than another was a bond of union. The kind of bond mattered little, for the compact group conquered the loosely organized group. In these savage struggles of early peoples the slightest advantage must have counted for much and often turned

[19] Bagehot, W.—*Physics and Politics,* 2nd. ed., p. 49.
[20] *British Ethnological Society's Transactions,* vol. iii, p. 137.
[21] Bagehot, *op. cit.,* p. 50.

the scale in favor of unity and coherence. Hence group loyalty and adherence were traits which favored the survival of those tribes which possessed them. The efforts of these peoples were therefore bent to the attainment of qualities upon which group safety and solidarity seemed most obviously to depend. As customs and usages were often associated with past security and success it became the function of the group to restrain its younger members from any act of innovation. It is probable that as primitive man began to observe that the blows of nature fell without discrimination upon all, he began to associate accidental change in the way of performing a customary act, with disaster to the group. He assumed that repetition of the innovation would be followed by like disaster. Similarly, it may have happened, quite by chance, that the transgression of a rule of conduct was followed by calamity to the group. Thereafter any transgression would be safely guarded against, in the belief that a like calamity would be the inevitable consequence.[22] There was no "limited liability" in their conception of human relations; the life of individuals in society was regarded as a partnership on which a rash member by a sudden impiety might bring utter ruin. They were possessed with the notion that ill-luck does not attach itself simply to the doer, but may fall upon any member of the group.[23] In Molembo a pestilence broke out soon after a Portuguese had died there. After that the natives took all possible measures not to allow any white man to die in their country.[24] On

[22] Chapin, F. S.—*Education and the Mores, Columbia Univ. Series in Hist., Eco. and Pub. Law*, vol. xlii, no. 2, pp. 27-28.

[23] Bagehot, *op. cit.*, p. 102.

[24] Bastian, *San Salvador*, p. 104.

the Nicobar Islands some natives who had just begun to make pottery died. The art was given up and never again attempted.[25] A Yakut woman contracted an endogamous marriage. She soon afterwards became blind. This was thought to be on account of the violation of ancient customs.[26]

From the illustrations we have just cited it is clear that, as association increases the social experience of the primitive group and complex relations develop, a social pressure begins to operate and exercises restraint over the actions of its members. The human consciousness of kind including sympathies, antipathies, prejudices, and cordialities, develops the notion of type and makes the group sensitive to any lack of conformity to that type. Members who do not follow the established usages of the group come to be regarded as disloyal to its traditions. They are restrained, persecuted, or outlawed.* And so it happens that, while the first essential to the development of that group solidarity which spells victory and survival, is a bond of custom or usage, this very unity may be preserved at the expense of exterminating useful and helpful variation. The group pressure upon its members becomes unreasonable and oppressive. "What is most evident is not the difficulty of getting a fixed law, but getting out of a fixed law; not of cementing (as upon a former occasion I phrased it) a cake of custom, but of breaking the cake of custom; not of making the first preservative habit, but of breaking through it, and reaching something better."[27]

* See Appendix I—Social Selection, p. 297.

[25] Ratzel, F.—*Anthropogeographie*, vol. ii, p. 699.

[26] Sieroshevski, V. L.—*Yakuty*, p. 558. [27] Bagehot, *op. cit.*, p. 53.

Usages give solidarity and coherence to the group. The unity secured by loyalty to its traditions makes survival assured. But if there is to be further progress and continuing success in the struggle, the restraint of disloyal members must not be carried over into a habit of persecution which fails to discriminate between helpful innovators and dangerous egoism. Nature allows variations from type. When these variations give advantage, natural selection secures the preservation of those individuals which possess them. Yet among men there is often a tendency to preserve the old usage at a sacrifice of new and useful activities—to persecute for the sake of persecution. This habit has led one sociologist to say that men try to preserve what nature has ordained to decay.[28] The result is a retarded state of culture. "In certain respects each born generation is not like the last born; and in certain other respects it is like the last. But the peculiarity of arrested civilization is to kill out varieties at birth almost; that is, in early childhood, and before they can develop. The fixed custom which public opinion alone tolerates is imposed on all minds, whether it suits them or not."[29] Those primitive groups that clung blindly to their superstitions and imposed their customary discipline upon their innovating members by terrible sanctions, killed out of the whole society the propensity to variation which was the principle of progress.

If association is responsible for the intellectual faculties of man, it is doubly responsible for his moral nature. Morals are socially determined. They are the result of social growth and experience. They are the rules of life found to work in the evolution of any particular group. Morals are "nothing but the conviction

[28] Gumplowicz.

[29] Bagehot, *op. cit.*, p. 54.

SUPPLEMENTARY READINGS.

Bagehot, W.—*Physics and Politics.*
Cooley, C. H.—*Social Organization.*
Giddings, F. H.—*The Principles of Sociology.*
Giddings, F. H.—*Descriptive and Historical Sociology.*
Gumplowicz, L.—*The Outlines of Sociology.*
Kropotkin, P.—*Mutual Aid.*
Sumner, W. G.—*Folkways.*

Note. John Fiske thought that the family was the chief factor in social evolution which brought about the development of man's higher emotional, moral and intellectual nature. The human nervous system is such a complex thing that its development is extended over a considerable period. During the period of helplessness, parental instincts led one or both parents to care for the young. Hence the prolongation of infancy served to keep the parents together for longer and longer periods in successive epochs. In this way the family became the source of associated life. Giddings considers that Fiske's theory reverses the probable order of cause and effect. The complex brain and nervous system which brought about the prolongation of infancy could only have developed as a consequence of the stimulating relationships of social life. Hence there must have been association before the family group appeared. Whatever its form, this primitive social life was sufficiently stimulating to cause the adjustment in nervous structure which resulted in the prolongation of infancy, and this, in turn, resulted in the family. Thus it is seen that the family was not the single original germ from which society grew. On this point others have written. Petrucci says, "The family, therefore, is not essential to the formation of societies. The clan may sometimes be an extension of the family, but in certain animal species, as in man himself, it is not always the direct line of parentage which is at the basis of the group. Sometimes, furthermore, the group can be established only when the family disappears." In discussing the origin of human society, Kropotkin says that anthropology "has established beyond any doubt that mankind did not begin its life in the shape of small isolated families. Far from being a primitive form of organization, the family is a very late product of human evolution. . . . Societies, bands, or tribes—not families—were the primitive form of organization of mankind and its earliest ancestors. . . . None of the higher mammals, save a few carnivores and a few undoubtedly decaying species of apes (orang-outans and gorillas), live in small families, isolatedly struggling in the woods. All others live in societies." For a more complete discussion, see Parmelee, *The Science of Human Behavior,* pp. 399-421.

Note.—More ample treatment of the principles of social selection and societal selection, principles merely touched upon in the preceding chapter, will be found in Appendix I, Social Selection, pp. 297-310.

V

THE INFLUENCES OF PHYSICAL ENVIRONMENT

Life in society becomes a life of increasing complexity and richness of experience. The intricate adjustments and adaptations demanded of social individuals tend to make them more refined in their responses to external stimuli, and develop a highly complicated nervous organization accompanied by an increasing mellowness of culture. But the individual man or animal living under the conditions of group life is none the less subjected to influences from the surrounding conditions of its physical environment. Climate, soil, food, and the general topography of the group's habitat exercise a powerful sway over the life of both group and individual. The conditions of surrounding nature act as compelling and restraining forces to which adaptations must be made. The inheritance of modifications caused during the life of the organism by its effort to adapt itself to the forces of environment, has been discussed in chapter II. In the present chapter we shall consider the effect of geographic environment upon the mode of life and the cultural development of social groups.

"Man can no more be scientifically studied apart from the ground which he tills, or the lands over which he travels, or the seas over which he trades, than the polar bear or the desert cactus can be understood apart from its habitat. Man's relations to this environment are

infinitely more numerous and complex than those of the most highly organized plant or animal. So complex are they that they constitute a legitimate and necessary object of special study. . . . Man has been so noisy about the way he has 'conquered Nature,' and Nature has been so silent in her persistent influence over man, that the geographic factor in the equation of human development has been overlooked. . . . Now the geographic element in the long history of human development has been operating strongly and operating persistently. Herein lies its importance. It is a stable force. It never sleeps. This natural environment, this physical basis of history, is, for all intents and purposes immutable in comparison with the other factor in the problem—shifting, plastic, progressive, retrogressive man." [1]

Miss Semple makes us see that in every problem of history there are two main factors, commonly called heredity and environment. Professor Cooley makes us look upon mind and matter, soil, climate, flora, fauna, thought, language, and institutions as aspects of a single rounded whole, one of total growth. He presents the organic view of history. He expressly denies that any factor is more ultimate than others. If we concentrate our attention upon one of these factors, we should never go so far as to overlook the subordination of each to the whole. "History is not like a tangled skein which you may straighten out by getting hold of the right end and following it with sufficient persistence . . . there is no logical primacy, no independent variable, no place where the thread begins." [2] Both Miss Semple and Professor

[1] Semple, E. C.—*The Influences of Geographic Environment*, 1911, ch. i, p. 2.

[2] Cooley, C. H.—*Pub. Amer. Economic Association*, 3rd Ser., vol. v, ff. 426, and Cooley, *op. cit.* ch. xxii.

Cooley are right in their interpretations. The important thing to remember is that we are dealing with society, a social organization which has had an organic growth dependent upon certain conditions. It is our primary object to classify and enumerate these conditions, not to assign fixed and dogmatic causal relations among them.

Physical environment may affect the human individual as an influence causing modification in structure or function, it may accelerate or retard physical and mental growth by the presence or absence of proper nutriment, and it may act as a selective agency determining survival or extermination. Although anthropologists regard the form of the body as the most stable characteristic of any given race or type, indications have been found which show that under more favorable environment the physical development of a race may improve. The investigations of Gould and Baxter during the War of the Rebellion have shown that the representatives of European nationalities born in America have statures higher than the representatives of the same nationalities born in Europe. It was assumed that better nutrition and improved hygienic and economic conditions in general might increase the stature of a people.[3] These conclusions were confirmed by Bowditch's measurements of the school children of Boston and by other investigations of similar nature.[4] Corroborative evidence has also been obtained from the study of various social classes. Bowditch found that there was an increase of stature, beginning with the children of unskilled laborers, and increasing among

[3] Gould, B. A.—*Investigations in the Military and Anthropological Statistics of American Soldiers,* New York, 1869; and Baxter, J. H.—*Statistics, Medical and Anthropological,* Wash., 1875.

[4] Bowditch, H. P.—*The Growth of Children, 8th Annual Report State Bd. of Health of Mass.,* Boston, 1877; see also Boas, *op. cit.,* ch. ii.

those of skilled laborers, members of the mercantile class and of the professional class. But these changes of stature are not to be interpreted as changes in type. It is better to regard them as due to the elimination of retarding influences which prevent many individuals from attaining their normal growth.[5]

The retarding and accelerating influences of physical environment often bring about very considerable changes in anthropometric traits during the period of growth. Professor Boas says, "Setting aside the prenatal development, we find that at the time of birth some parts of the body are so fully developed that they are not far removed from their final size, while others are quite undeveloped. Thus the skull is, comparatively speaking, large at the time of birth, grows rapidly for a short time, but very soon approaches its full size, and then continues to grow very slowly. The limbs, on the other hand, grow rapidly for many years. Other organs do not begin their rapid development until much later in life. Thus it happens that retarding or accelerating influences acting upon the body at different periods of growth may have quite different results. After the head has nearly completed its growth, retarding influences may still influence the length of the limbs. The face, which grows rapidly for a longer period than the cranium, can be influenced later than the latter. In short, the influence of environment may be the more marked, the less developed the organ that is subject to it."[6] An important consequence of this for the sociologist is that the retardation seems to be lasting. "In other words, a retardation in development is never completely made good by long-continued development."[7] It has been demonstrated by the in-

[5] Boas, *ibid.* [6] *Ibid.*, pp. 47-48. [7] *Ibid.*

vestigations of Boas and Wissler[8] that unfavorable environmental influences which cause a child to grow slowly during a number of years act as retarding causes such that the child will probably continue to grow more slowly than other, normal children. Even at completed growth the child is smaller than its normal companions. On the other hand, children who have had their growth accelerated by favorable surroundings reach the adult stage earlier and attain a relatively greater size and development. Thus the absolute size and the relative proportions of the body are influenced by periods of retardation or acceleration. These periods of change in the rate of growth appear to be due to such retarding causes as: illness in early childhood, malnutrition, lack of fresh air and physical exercise,—to the influences of environment, physical and social.

The conclusion to be drawn from this body of evidence is that environment is most potent as a modifying cause in early plastic years. On the other hand, there are now available several studies of considerable importance which seem to show that environment is not such an important factor in the development of children. These investigations have been made by the Galton Laboratory for National Eugenics of the University of London, under the direction of Professor Karl Pearson. The inheritance of vision and the relative influence of heredity and environment on sight have been studied[9] and the statisticians have reached the following conclusions from their admittedly slender data: (1) No evidence whatever that over-crowded, poverty-stricken homes, or physically

[8] Boas, F., and Wissler, C.—*Statistics of Growth, Report of U. S. Commissioner of Education for 1904*, pp. 25-132.

[9] *Eugenics Laboratory Memoirs*, V.

ill-conditioned, or immoral parentages are *markedly* detrimental to the children's eye-sight; (2) No sufficient or definite evidence that school environment has a deleterious effect on the eye-sight of children; (3) Ample evidence that refraction and keenness of vision are inherited characters. When it is considered that this study was undertaken in anticipation of finding that inheritance and environment factors would be far more comparable in magnitude, it is evident that the investigation was pursued without bias. A second study, of the influence of defective physique and unfavorable home environment on the intelligence of school children, showed that there was "no sign of an environmental condition producing an effect on the mentality of the child at all comparable with the known influences of heredity."[10] This investigation also appears to have been undertaken with an open mind. Finally, the controversial "Study of the Influence of Parental Alcoholism on the Physique and Ability of the Offspring,"[11] appeared to show that there was no *marked* relation between intelligence, physique or disease of the offspring and parental alcoholism in any of the categories investigated. For example, the study showed that the average weight and height of the children of alcoholic parents was slightly in excess of that of children of sober parents; the general health of the children of alcoholic parents appeared to be slightly better than the health of children of sober parents. However completely subsequent investigations may correct or confirm the conclusions of the London eugenists, certain it is that in the present stage of our knowledge we can make no dogmatic statements

[10] *Eugenics Laboratory Memoirs*, VIII, p. 60.

[11] *Eugenics Laboratory Memoirs*, X.

FIGURE 49. Winter in the North. A Winter Topeck in Siberia.

as to the absolute effect of environment, and until we have made more comprehensive investigations it is best to leave the matter open.

A study of the direct influence of environment upon the bodily form of man was made in 1908 and 1909 by Professor Boas.[12] Four groups of people were investigated; the south Italians, representing the Mediterranean type of Europe, characterized by short stature, elongated head, dark complexion and hair; the central European type, characterized by medium stature, short head, light hair and lighter complexion; the northwest European type, characterized by tall stature, elongated head, light complexion, and blond hair; and in addition, an extended series of east European Hebrews, who resemble in some respects the central European group. The traits selected for examination were head measurement, stature, weight, and hair-color. The result of the inquiry was to show that the American-born descendants of these types differ from their parents; and that these differences develop in early childhood and persist throughout life. It was found that head form, which has always been considered as one of the most stable and permanent characteristics of human races, undergoes far-reaching changes due to the transfer of the races of Europe to American soil. The east European Hebrew, who has a very round head, becomes more long-headed in the first generation born in America; the south Italian, who in Italy has an exceedingly long head, becomes more short-headed in the first generation born in America; so that both approach a uniform type in this country,

[12] *Changes in Bodily Form of the Descendants of Immigrants, The Immigration Commission,* 61st. Cong., 2d Session, Doc. no. 208; see also *The Mind of Primitive Man,* ch. ii, for discussion.

so far as roundness of head is concerned. If American environment can bring about a modification of head form in the first generation, the question presents itself, may it not be that other characteristics may be as easily modified? A comparison of the width of face of Bohemians with facial width of American-born individuals was made. When the Bohemians were arranged according to their ages at the time of immigration, the results showed that there was a loss among those who had come here as young children. When this comparison was continued with the Americans, born one, two, and more years after the arrival of their mothers, the width of face was seen to decrease still further. It appears that American environment caused a retardation of the growth of the width of face. Professor Boas concludes, "I think, therefore, that we are justified in the conclusion that the removal of the east European Hebrew to America is accompanied by a marked change in type, which does not affect the young child born abroad and growing up in American environment, but which makes itself felt among the children born in America, even a short time after the arrival of the parents in this country. The change of type seems to be very rapid, but the changes continue to increase so that the descendants of immigrants born a long time after the arrival of the parents in this country differ more from their parents than do those born a short time after the arrival of the parents in the United States." [13] If this process of change explains the difference between racial types in America it is possible that the same environmental influence has operated in the past to produce many of the racial types which appear stable to-day. In considering these conclu-

[13] *Changes in the Bodily Form of Descendants of Immigrants*, p. 52.

FIGURE 50. Summer in the North. A Summer Topeck in Siberia.

sions we must remember that the evidence which we have points to the fact that neither environment nor training can produce, in the sense of originating, human characteristics, good or bad. But it is environment that determines whether given characteristics, when born into the world, shall perish by starvation or conflict, or shall survive and perpetuate themselves in following generations.

Perhaps the most obvious and rigorous effect of physical environment is the selective influence exercised by climatic gradations from extreme heat to extreme cold, and from excessive aridity to excessive moisture. Physical environment sets limits to human habitation. Life is maintained with great difficulty in the Arctic and Antarctic regions.[14] In the Torrid regions activities must be confined to the comparative cool of the early morning or the evening. The intense heat of mid-day makes inaction necessary.

The heat belt, that section of the globe lying roughly between 30° north latitude and 30° south latitude where the mean annual temperature is 68° Fahrenheit, is inhabited by peoples who have during the last five hundred years contributed little to human advancement. The natives of the tropics and sub-tropics, of Mexico, the Central American republics, the West Indies, the greater part of South America, practically the whole of Africa, Arabia, India, Burma, Indo-China, the Malay Peninsula, the Malay Archipelago, Polynesia, and the Philippine Islands, have contributed an almost negligible addition to art, literature, science and thought. It has been the inhabitants of those countries which lie outside the heat belt, the Continent of Europe, the United Kingdom, the United States, Canada, Australia, Central and Northern

[14] See figures 49 and 50.

Asia, Japan, and the greater part of China, that have achieved things in art, literature and science during the last one thousand years.[15] Climate affects the energy and regularity with which labor is conducted. Extreme heat such as exists in the torrid and semi-torrid regions mentioned, tends to enervate the worker, whether he be manual laborer or brain worker. Prolonged and persistent labor is impossible. The result is unstable and irresponsible methods of life. Regular habits are not easy to cultivate when heat makes effort desultory.[16]

Climatic conditions in the far north are such as to interfere with the regularity of labor. The intense cold benumbs the limbs and interferes with freedom of movement.[17] It depresses the normal operation of the vital processes and dulls ambition. "Thus we find that no people living in a very northern latitude have ever possessed that steady and unflinching industry for which the inhabitants of temperate regions are remarkable. The reason for this becomes clear when we remember that in the more northern countries the severity of the weather and, at some seasons, the deficiency of light render it impossible for people to continue their usual out-of-door employments."[18] In cold climates the bodily warmth necessary to sustain vital processes in a normal state is maintained by the consumption of large quantities of oily food, such as whale oil, and blubber. But this highly carbonized food, although very essential, is quite scarce. It can be obtained only from the fat and oils of powerful and ferocious animals. This lack of sufficient food affects the numbers of the people. Deficiency of

[15] Ireland, A.—*The Far Eastern Tropics*, pp. 2-4.
[16] Buckle, H. T.—*History of Civilization in England*, 1857-1861, ch. ii.
[17] See figure 51.
[18] *Ibid.*

FIGURE 51. Environmental Conditions in the Far North. A Missionary's Winter Trip in Labrador.

subsistence is reflected in the sparse population. Indeed, the fact of its scarcity has been responsible for certain characters in the culture of the Eskimo which are revolting to us and seem quite inconceivable, largely because the mitigated rigors of our environment have accustomed us to milder usages. For example, while it is customary with us to respect and look after the aged members of our family, among the Eskimo it is required of children to kill their parents after they have become too old to help the family or serve the community. It is considered a breach of filial duty not to kill the aged parent. The custom is founded upon the ethical law of the Eskimo and rests upon the whole mass of traditional lore and custom.[19] When members of the community cannot work and contribute to the food supply they have to be made away with because there are young mouths to feed and there is otherwise not sufficient food for all.

Races are very sensitive to climatic environment. Although man is more adaptable to climatic changes than many animals, environment in its climatic influences does act nevertheless as a selective agency. For example, the Eskimo sickens and dies in the temperate and semi-torrid zone. The European cannot endure the long winters and the severe cold of the Arctic Circle. The negro, perhaps, would die out in northern United States were he not replenished from the South. And the "Scandinavian does not seem to prosper in the dry, sunny portions of the United States, where he is subject to diseases of the skin and nerves which appear seriously to deplete his numbers in a few generations. But in the

[19] Boas, F.—"The Mind of Primitive Man," *Jour. Amer. Folk-Lore*, v. 14, p. 10.

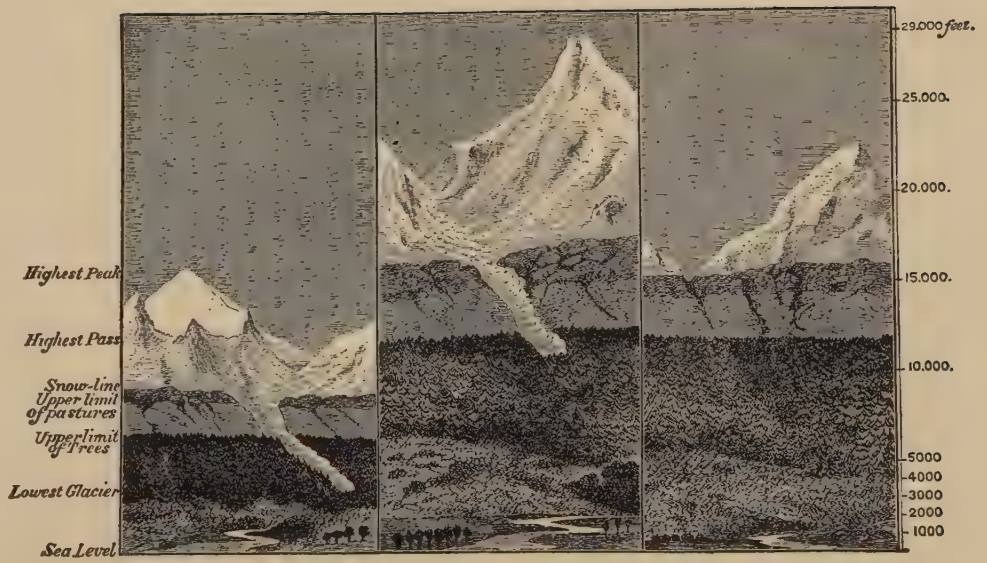


FIGURE 52. The vertical distribution of Climate in the Mountains, showing how Land-masses raise the Temperature.

rainy Northwest, which resembles his native habitat, he thrives both in body and estate." [20]

Besides the climatic gradations in temperature which are found in different latitudes, there is climatic variation in temperature correlated with altitude. There are zones of latitude and zones of altitude.[21] Miss Semple tells us that the southern slope of the Monte Rosa Alps, from glacier cap at 4,500 meters to the banks of the Po River, yields within certain limits a zonal epitome of European life from Lapland to the Mediterranean.[22] Climate changes with altitude in much the same way as with latitude. Generally speaking, heat and absolute humidity diminish as height increases, while rainfall becomes greater up to a certain level. "The effect of ascending and descending currents of air is to diminish the range of temperature on mountain slopes and produce rather an oceanic type of climate." [23] Uniform climate is usually found in a land of monotonous relief, while a region rich in vertical articulations is rich also in local varieties of climate. Plant and animal life conform to the climatic levels at different altitudes.

"Central Asia has a threefold cultural stratification of its population, each attended by the appropriate density, according to location in steppe, piedmont and mountain. The steppes have their scattered pastoral nomads; the piedmonts, with their irrigation streams, support sedentary agricultural peoples, concentrated at focal points in commercial and industrial towns; the higher reaches of the mountains are occupied by sparse groups

[20] Huntington, H.—"Changes of Climate and History," *Amer. Hist. Review*, vol. 18, no. 2, Jan. 1913, p. 231.

[21] See figure 52.

[22] Semple, *op. cit.*, p. 557.

[23] *Ibid.*, p. 558.

of peasants and shepherds, wringing from upland pasture and scant field a miserable subsistence."[24]

Thus far we have discussed climatic differences as though they occurred in certain fixed bands circling the earth. But climate in any given locality is, as we all know from our own experience, a relatively variable quantity. Aside from seasonal change there is much latitude of variation. This climatic cycle when considered in its wider aspect, that is, leaving out the temporary fluctuations of the year, and concentrating our attention upon changes that occur or recur over the period of many years or even centuries, is an important cause of movements of population. Recognition of the part played in history by climatic changes has led to the formulation of the theory of pulsatory climatic changes by Ellsworth Huntington.[25] "It seems to be true, as a principle, that, in regions occupied by the ancient empires of Eurasia and northern Africa, unfavorable changes of climate have been the cause of depopulation, war, migration, the overthrow of dynasties, and the decay of civilization; while favorable changes have made it possible for nations to expand, grow strong, and develop the arts and sciences."[26] However, this by no means implies that all invasions and all prosperity are supposed to be due to climatic causes, but merely that climate has been one of the important factors in producing such results.[27]

"In relatively dry regions increasing aridity is a dire calamity, giving rise to famine and distress. These, in turn, are fruitful causes of wars and migrations, which

[24] *Ibid.*, p. 558.
[25] *The Pulse of Asia*, 1907.
[26] Huntington, E.—*Palestine and Its Transformation*, 1910, p. 251.
[27] Huntington, "Changes of Climate and History," p. 215.

engender the fall of dynasties and empires, the rise of new nations, and the growth of new civilizations. If, on the contrary, a country becomes steadily less arid, and the conditions of life improve, prosperity and contentment are the rule. There is less temptation to war, and men's attention is left more free for the gentler arts and sciences which make for higher civilization."[28] ". . . Among primitive men the nature of the province which a tribe happens to inhabit determines its mode of life, industries, and habits; and these in turn give rise to various moral and mental traits, both good and bad. Thus definite characteristics are acquired, and are passed on by inheritance or training to future generations. If it be proved that the climate of any region has changed during historic times, it follows that the nature of the geographic provinces concerned must have been altered more or less. For example, among the human inhabitants of Central Asia, widespread poverty, want, and depression have been substituted for comparative competence, prosperity and contentment. Disorders, wars, migrations have arisen. Race has been caused to mix with race under new physical conditions, which have given rise to new habits and character. The impulse toward change and migration received in the vast arid regions of Central Asia has spread outward, and involved all Europe in the confusion of the Dark Ages."[29]

The pulsations of climate which have been important factors in the movements of populations both in prehistoric and historic times are of several types. The first type of climatic change is that of the Glacial period, during which great fluctuations took place, probably simul-

[28] *The Pulse of Asia*, p. 14. [29] *Ibid.*, pp. 15-16.

taneously, throughout the northern hemisphere. It is held, with some evidence, that once in thirty-six years, on the average, we pass through what may be called a climatic cycle. There are two extremes during a cycle, at one of which the climate of continental regions for a series of years is unusually cool and rainy, with a low barometric pressure and relatively frequent storms; while at the other it is comparatively warm and dry, with high pressure and few storms. These changes are most extreme in mid-continental regions, decreasing toward the sea-coast. Thus the Glacial period as a whole represents the largest type of pulsation. But upon it are superposed the great pulsations known as Glacial epochs, each with a length measured probably in tens of thousands of years. The steady progress of these cycles is interrupted by smaller changes of climate, such as those of which there is evidence during historic times in Central Asia. Finally the climate of the world pulsates in cycles of thirty-six years, and even these are interrupted by seasonal changes and by storms.

We have often heard it said that civilization has advanced from east to west. Mr. Huntington considers it more accurate to say that civilization has advanced from south to north. The civilizations which started in Egypt and Babylonia, we know, spread to Persia, slightly farther north. Then Syria, Greece, and Carthage became dominant. Next, Rome until its decline, and then an obscure period of transition until France, Austria, and the states of southern Germany grew in prominence. Finally, during modern times, the northern nations of Europe have risen to power. The common explanation has been that as man became more civilized he also became better adapted to colder and moister climatic conditions. Mod-

ern man has personally a higher nervous organization. But Huntington believes that even for the race gained the rudiments of civilization, it was always made most rapid progress under essentially the same climatic conditions. The conditions are that the summers shall have a sufficient degree of warmth and of rainfall to make agriculture easy and profitable, but not enough to be enervating; that the winters shall be cool enough to be bracing, but not deathlike; and that the relation of summer to winter shall be such that with forethought every man can support himself and his family in comfort the year round, while without forethought he and his will suffer seriously.[1] These conditions appear to have been present in each of the great nations of history at the time when it has risen to the highest degree of civilization and power. During the early part of the Christian era there was a relatively sudden desiccation in Central Asia. During the previous centuries the region was moist and fertile. It supported a vast population of men and animals. When the rainfall decreased fifty per cent, flocks of sheep diminished and the inhabitants were obliged to migrate in search of food. As these nomadic tribes pressed outward from Central Asia, they came in contact with others. Peoples pressed upon peoples, confusion spread in every direction, the wave of migration was felt in Europe two thousand miles away. In Cæsar's time, Europe was cold and swampy, but as it became warmer the throngs of primitive peoples, driven from behind by the hordes of restless nomads who had forsaken the arid Asiatic lands, swarmed into this fertile country. Climatic changes in Rome sapped the strength of the original population, so that in time the

[1] *Ibid.*, pp. 251-252.

governing power fell into the hands of vigorous northern barbarians. The civilization of Rome declined.[31]

We have now examined two kinds of climatic change, latitudinal and pulsatory. It remains to consider the influence of more local changes, what we commonly call the weather. Careful investigation has confirmed the popular belief that clear, cool weather is invigorating. Dexter, in his book, "Weather Influences," has made a study of the influence of various meteorological conditions upon the conduct of school children, upon the occurrence of crime, and upon the number of errors made by bank clerks. In damp, muggy weather people feel disagreeable and suppose themselves ready to do all sorts of evil things. As a matter of fact they do not do them, for the vital functions are so far depressed that there is no surplus energy to spend in doing anything very active, either good or bad. Dry, windy days stimulate the vital processes, unless it be exceptionally warm, and create a surplus of energy which finds expression in work

[31] The evidence employed to substantiate the theory of pulsatory climatic changes is roughly of four kinds. The first kind consists of physiographic phenomena such as river terraces, lake strands, denuded mountain slopes, desiccated springs, and rivers whose salinity has increased. A second kind consists of archeological phenomena, ruins of great cities in places whose supply of water is not now one-tenth large enough to support such a population as once existed. A third kind of evidence consists of historic accounts of famines, of old roads across the desert which to-day are impassable. Finally, evidence is based upon plant life. The thickness of the rings of annual growth in old trees has been found to be proportional to the amount of rainfall. Huntington measured the rings of annual growth of 450 of the Big Trees of California, *Sequoia gigantea*, and plotted the curve of climatic pulsation indicated by variation in these rings. The trees which were measured were from 230 to 3200 years old. Eighty were over 2000 years old and three more than 3000 years old. The data was, therefore, quite comprehensive. The curve showed a remarkable verification of the theory of pulsatory climatic change. The dry periods corresponding with the periods of desiccation shown by other phenomena. See "Changes of Climate and History."

or mischief, as the case may be. On very dry days in Denver the amount of crime among adults and of misconduct among school children increases largely. The nerves seem to become unstrung by reason of the high state of electric or magnetic tension, by the dryness and the wind. When the wind dies down and the air becomes moist, the nerves return to their normal condition, but the system has been through an experience which reduces the power to control emotional impulses. We find that people in extremely hot, dry countries, like Persia and Chinese Turkestan, are highly emotional and seriously lacking in self-control.

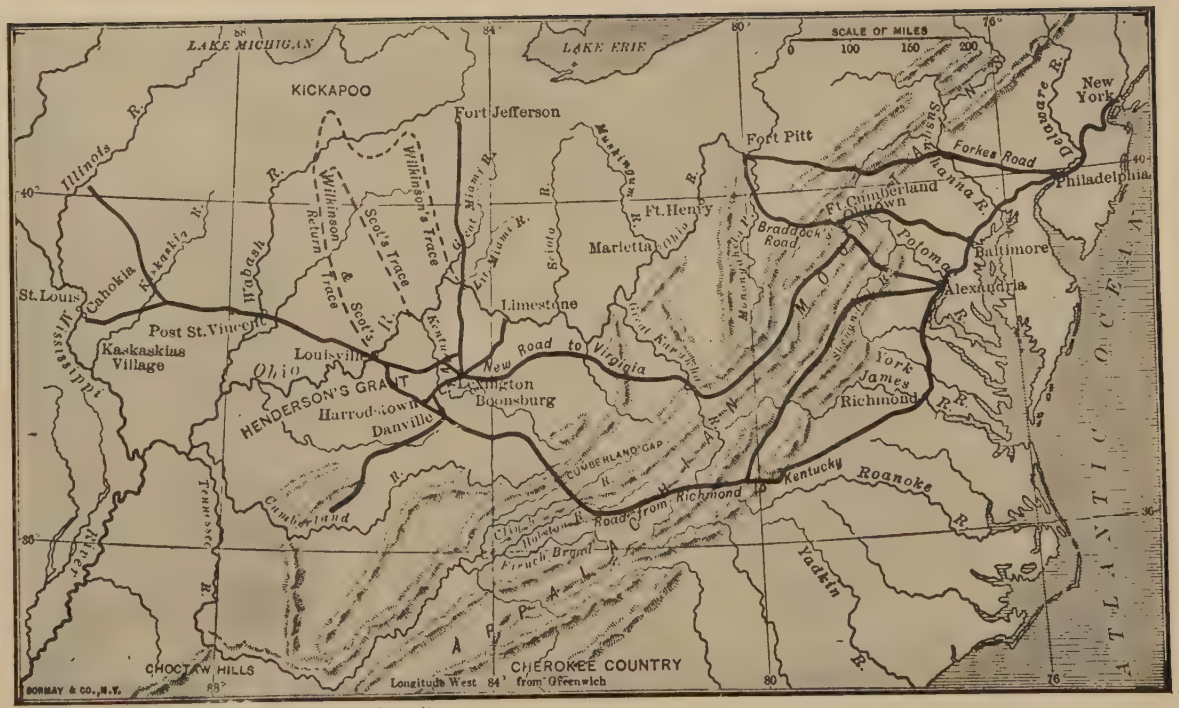
Each kind of climate and the geographical characteristics of every inhabited region exert more or less influence upon the industrial life and the social organization of the people. If the plain is waterless in summer and the plateau deeply buried in snow in the winter, the animals must migrate. Man finds the region too dry in one part and too cold in another part for agriculture. Therefore he must live upon animals, either as a hunter, or, after he has partially domesticated some species of animal, as a shepherd. This leads to a nomadic life, which in turn induces habits of cleanliness in eating, traveling, sleeping, working, and resting. Such habits becoming mass phenomena or usages of the group, develop moral standards of abstemiousness, hardihood under physical difficulties, laziness, hospitality, and the like. Thus the physical features mold the people. Geographical environment has an important influence upon the forms of invention. Protection against exposure is attained in accordance with the available materials; for example, the snow house of the Eskimo, the bark wigwam of the Indian, and the cave dwelling of the tribes of the

desert. The complex bows of the Eskimo appear to be due to the lack of any long elastic material for bow-staves, and various devices have been invented for securing elasticity of the bow where elastic wood is difficult to obtain. Tribes without permanent habitation resort to skin receptacles and baskets as substitutes for pottery.[32]

During the thousands of years before history was written primitive men were subjected to the varying climatic influences which we have described. These climatic influences were conditions to which primitive men had to adjust and adapt themselves as best they might. A great climatic change which caused the desiccation of a large and highly populated area killed off its human inhabitants by thousands. Those whose constitutions were plastic enough to withstand the change and make the necessary adaptations survived; others perished or migrated to more favorable territory. In the course of migrations, these early peoples not possessing our knowledge of means of transportation and communication, were subordinated to the natural barriers or means of travel such as mountain masses and valleys. The surface of the earth has determined the movements of populations and the migrations of races from those areas which climatic changes have made uninhabitable.

Valleys offer channels for the easy movement of humanity. They are grooves which have time and again determined the destination of aimless, unplanned migrations. The passing of peoples follows these nature-made highways. "The maritime plain of Palestine has been an established route of commerce and war from the time of Sennacherib to Napoleon." Up the Danube valley

[32] Boas, *op. cit.*, p. 160.



From Coman, "The Industrial History of the United States."

FIGURE 53. Topography and Migration, Roads and Trails into the Western Territory.

have pressed long series of barbarian invaders from Attila the Hun to the Turkish besiegers of Vienna in 1683. The river is a great natural highway to which every neighboring state desires access. In America, the Mohawk depression through the northern Appalachians diverts a significant amount of Canada's trade from the Great Lakes to the Hudson.[33] Formerly it enabled the Dutch traders at New Amsterdam to tap the fur trade of Canada's forests, and later, after the construction of the Erie canal, enabled New York to defy the competition of Boston, Philadelphia and Baltimore, in providing the easiest outlet for the commerce of the rich Ohio valley. The Cumberland Gap was the natural avenue to the West from Virginia and the Carolinas. Buffalo, Indian and pioneer have successively followed this route.[34] Natural conditions have fixed channels in which the stream of humanity most easily moves.[35] The direction of mountain ranges determines within certain limits the destination of migration, and this tends to keep succeeding waves to the old channels. These lines of least resistance are first sought out and only when they are blocked or preëmpted do the invaders turn to more difficult paths.

The long and narrow valley of the Nile, with its fertile hem of flood-plain on either bank and the protecting barrier of the great desert beyond, furnished conditions favorable to the development of a great civilization. Here was a rich soil kept in splendid condition by the annual flood period which replenished the vital mineral and organic elements withdrawn by the crops, so that

[33] Semple, *op. cit.*, p. 5.
[34] Semple, E. C.—*American History and Its Geographic Conditions*, p. 68.
[35] See figure 53.

the land stood the drain of thousands of years of cultivation required to support the thick population of the valley. The date-palm, easy of cultivation, offered nourishing food. The vast stretches of the desert beyond the valley wall protected the inhabitants from external foes. Warm climate, fertile soil, constant water supply and protection from invasion made easily possible production beyond the necessities of life. Such surplus is absolutely essential to the development of civilization. So it was that the Nile valley became one of the earliest culture centers. The formation of the valley, making the river always accessible, facilitated the development of trade and commercial relations between the many little states first appearing along the Nile. The disposable wealth created by this combination of happy circumstances led in later centuries to the rise of non-laboring classes—rulers, courtiers, soldiers, priests, landlords, and merchant princes—at times serviceable, at other times merely parasitic. The leisure made possible by slave labor on a gigantic scale gave time for the development of art, literature, science and philosophy. Civilization resulted from surplus production depending in turn upon the existence of certain natural resources and favorable conditions of climate and location.

"Egypt affords an excellent example of the value of climatic study. . . . Here we have a hot, dry climate where the main dependence for the crops is not on the rains but on the rise of the Nile. This rise, regular as the seasons, the comparatively small change in temperature among the seasons themselves, the almost complete absence of rainfall, taken in connection with the fertility of the soil and the small number of staple crops, has produced a condition of affairs in which all that is demanded

is a steady carrying out of a routine which never changes and requires rather brawn than brain. This we find admirably reflected in the character of the peasantry, now, as in antiquity, interested only in the securing of enough food to live and to marry upon. But this did not seriously modify the character of the ruling class for, from pre-dynastic times, they have always been foreigners. Accordingly, their character has always been that formed in other countries. Only one effect should be noted. Just because they did not adjust themselves to the climate, they became enervated and finally were killed off. In other words, the climate has only a negative effect on the men who have made Egyptian culture worthy of our study."[36]

Natural conditions in the Nile valley permitted the congregation of a large population in a small area and thereby made possible the development of a high civilization. For the closer the contact between men, the more intimate the intercourse, and the less the likelihood of losing the fruits of collective experience. Competition of many individuals sharpens wits and raises the activity of human powers. The maintenance of steady increase of population seems to be intimately connected with the development of culture.[37] Sparsely populated areas have a low type of civilization. In all centers of civilization, whether old or new, we find dense populations. If the topography of a region limits the possibilities of intercourse and renders large permanent assemblies of men impossible, there is slight chance for the development of an enduring culture.

[36] Olmstead, A. T.—"Climate and History," *Journal of Geography*, vol. x, pp. 163-168.

[37] Ratzel, F.—*History of Mankind*, vol. i, pp. 10-12.

The topography of an inhabited region, besides determining the direction and destination of migrations or furnishing protection from the assaults of hostile peoples, often results in the more or less complete isolation of a people from the progressive or retarding influences acting upon the general population without the sheltered valley or far from the lonely island.

Isolation prohibits much intermixture of different stocks. This tends to accentuate traits already existing in the stock, as potential possibilities. Sometimes defects, intensified and inherited, appear with great frequency. Dr. Alexander Graham Bell made a careful genealogical study of western Martha's Vineyard and found that there had been a great deal of intermarrying and a great many consanguineous marriages. The locality is inhabited by farmers and fishermen of average intelligence and good character. Deaf mutes are strikingly numerous. In 1880 there was a proportion of 1 to 25 of the whole population affected.[38] Further south along the Atlantic coast there are beaches or banks some distance from the mainland. Here there are many consanguineous marriages. A wide-spread trait that may be ascribed to this inbreeding is suspicion and mental dullness; and a relatively high frequency of insanity.[39] Over sixty-six per cent. of the population of Sardinia are brunettes. Whereas, brunettes on the continental peninsula of Italy range from thirty-eight per cent. to over sixty-six per cent. of the total population. This shows how the pure color traits of the stock have been preserved by isolation.[40]

[38] Davenport, C. B.—*Heredity in Relation to Eugenics*, 1911, pp. 191-192.

[39] *Ibid.*, p. 193.

[40] Ripley, W. Z.—*The Races of Europe*, p. 253.

Isolation affects not only the physical characters of the people but their cultural development as well. Separated from the stream of collective experience by moun-

FIGURE 54. Natives adapting their life to dangerous conditions of existence. A tree-dwelling in the tiger infested jungles of India.

tain barrier or sea, men retain customs and usages which have long since fallen into disuse in the thronging centers of life on the neighboring plain or continent. Sardinia and Corsica are two of the most primitive spots in all Europe because they are islands off the main line. To a large extent feudal institutions of the Middle Ages prevail. The old wooden plow of the Romans is still in

common use to-day.[41] The Transylvania Saxons, although isolated from their German relatives for seven hundred years in the midst of a Hungarian population have preserved the Teutonic traditions of the fatherland. They have clung stubbornly, tenaciously, blindly to each peculiarity of dress, language and custom, knowing that every concession meant increased danger of assimilation into the surrounding Hungarian population. If they had been left on their native soil, and surrounded by friends and countrymen, they would undoubtedly have changed as other nations have changed. Their isolated position and the peculiar circumstances of their surroundings have kept them what they originally were.[42] The mountaineers of the southern Appalachians have been isolated from the experiences of the rest of America since colonial times. President Frost of Berea College calls these people, "Our contemporary ancestors of the South." They have been undisturbed by the railway, the printing-press, the electric car, the automobile, the power loom and the telegraph. They retain in all their simplicity the industrial methods of our colonial ancestors. Wool is spun by the old-fashioned wheel and woven into cloth by the clumsy hand loom. Here we have the survival of a culture which the rest of the nation has outgrown. New ideas have been rapidly communicated outside these isolated mountain valleys and the whole length and breadth of the land has gained by the discovery of the few. Isolation, while it may act as a protective influence in the early stages of civilization, retards later development.

The earlier advocates of the materialistic interpreta-

[41] *Ibid.*, p. 271.

[42] Gerard, E.—*The Land Beyond the Forest*, pp. 31-32, 33, 34.

FIGURE 55. Awe-inspiring Scenery of the Grand Cañon of the Colorado.

tion of history, Montesquieu [43] and Buckle,[44] attributed the immutability of religion, usages, manners and laws in India and other Oriental countries to their warm climate, vast plains and great mountains, the grandeur of whose scenery excites the fancy and paralyzes the

FIGURE 56. Confidence-inspiring Environment of Greece, the beautiful Vale of Tempe.

reason. The modern scientific geographer "finds that geographic conditions have condemned India to isolation. On the land side, a great sweep of high mountains has restricted intercourse with the interior; on the sea side, the deltaic swamps of the Indus and the Ganges rivers and an unbroken shoreline, backed by mountains on the west of the peninsula and by coastal marshes and lagoons on the east, have combined to reduce its accessibility from

[43] *Spirit of the Laws*, bk. xiv, ch. iv.
[44] *History of Civilization in England*, ch. ii.

the ocean. The effect of such isolation is ignorance, superstition, and the early crystallization of thought and custom. Ignorance involves the lack of material for comparison; hence a restriction of the higher reasoning

FIGURE 57. Confidence-inspiring Environment of Greece, Mount Ossa.

processes, and an unscientific attitude of mind which gives imagination free play. In contrast, the accessibility of Greece and its focal location in the ancient world made it an intellectual clearing-house for the eastern Mediterranean. The general information gathered there afforded material for wide comparison. It fed the brilliant reason of the Athenian philosopher and the trained imagination which produced the masterpieces of Greek art and literature.'' [45]

Buckle's theory was that the awe-inspiring aspects of nature in India, enormous mountain masses, vast

[45] Semple, *Influences of Geographic Environment*, pp. 18-19.

FIGURE 58. Awe-inspiring aspect of Nature in the Alps. Interlaken with Jungfrau in the distance.

heated plains, ravages of hurricanes, tempests, earthquakes, and devastation by animals hostile to man, constantly pressing upon the people, "affected the tone of their national character." Associations were engendered in the mind which made the imagination predominate over the reason and infused into the people a spirit of reverence rather than one of inquiry. All the surrounding natural conditions encouraged a disposition to neglect the investigation of natural causes and to ascribe events to the intervention on the part of supernatural agencies.[46] Man, contrasting himself with the force and majesty of nature, feels a sense of inferiority, and hardly cares to scrutinize the details of which such imposing grandeur consists.

The hypothesis of isolation which Miss Semple advances in contradistinction to Buckle's theory, seems on the whole the more reasonable of the two explanations, especially when there seems to be little doubt in the minds of many historians as to the great significance of commerce and the exchange of ideas in the development of Greek civilization. But there is much truth in what Buckle suggests. His contention is that the intellectual achievements of the Greek have been in large measure due to the absence of aspects of nature which terrified and the presence of geographic surroundings which inspired confidence in human skill. The Ægean, with its numerous islands and sheltered harbors, furnished refuge and safe hiding-places from hostile neighbors. The mountains of the mainland were not lofty enough to be awe-inspiring, but were sufficiently high to give beauty and suggestion to the scenery.[47] Under these conditions

[46] Buckle, *op. cit.*, 1873, p. 126.
[47] See figures 56 and 57.

there was adequate protection from enemies, and yet communication was still possible with other peoples and civilizations. There was comparative safety without the degree of isolation that precludes transmission of intelligence and development of commerce. Communication and commerce were undoubtedly more important factors in the development of Greece than the general aspects of nature which inspired confidence. Yet Buckle has recognized a factor of environment which deserves consideration.

Heinrich von Treitschke, in his "Politik," ascribes the absence of artistic and poetic development in Switzerland and the Alpine region to the overwhelming aspect of nature whose majestic sublimity there paralyzes the mind.[48] He cites the fact that, by contrast, the lower mountains and hills of Swabia, Franconia and Thuringia, where the scenery is milder, stimulating, but not overpowering, have produced many poets and artists. Moreover, the geographical distribution of awards made by the Paris *Salon* of 1896, shows that art flourishes in the river lowlands of France where nature is more appealing, rather than in the rough highlands of Savoy, and the massive eastern Pyrenees. But this difference might be explained on racial grounds because the population of the lowlands is Teutonic and the peoples of the highlands are Alpine and Celtic.

Buckle believes that the sublime and terrible aspects of nature in India, exerting their depressing influence upon the minds of the inhabitants for many centuries have been a considerable factor in the development of all that is inconsistent and superstitious in the Hindoo culture. The threatening aspects of the external world

[48] See figure 58.

FIGURE 59. The Great Gopura, Madura Temple, India.

have filled the minds of the people with images of the grand and the terrible which they have striven to reproduce in the dogmas of their theology, in the character of their gods, and even in the forms of their temples.[49] The ancient literature of India shows evidence of the most remarkable ascendancy of the imagination.[50] Most of their works on grammar, on law, on medicine, on geography, on mathematics, and on metaphysics are in the form of poetry. There is an excessive reverence for antiquity. In ancient times their wise and great men were supposed to have lived to an extraordinary age. One eminent man "lived in a pure and virtuous age, and his days were indeed long in the land, since when he was made king he was a million years old; he then reigned six million three hundred thousand years; having done which, he resigned his empire, and lingered on for one hundred thousand years more."[51] Speaking of the growth of American Indian mythologies with their many strange inconsistencies and superstitions, Professor Boas says, "There can be no doubt that the impression made by the grandeur of nature upon the mind of primitive man is the ultimate cause from which these myths spring, but nevertheless the form in which we find these traditions is largely influenced by the borrowing."[52]

Thus, it appears that the physical environment including its climatic relations has been a significant factor in social evolution. On the one hand, a population is driven from its accustomed abode by the force of some gradual climatic pulsation, and the movement of the people is

[49] See figure 59.

[50] Buckle, *op. cit.*, ch. ii.

[51] *Ibid.*

[52] "The Growth of Indian Mythologies," *Jour. Amer. Folk-Lore*, vol. ix, p. 9.

most often along routes predestined by the configuration of the country. But on the other hand, a race that has developed a civilization in some well nourished and protected area falls into decline because the very conditions which gave safety in the earlier period, now isolate the people from the great currents of men and ideas that move along the more accessible river valleys and over the vast and fertile alluvial plains where great cities have arisen, causing exchange of commodities and the contact of minds. If the aspects of nature are terrifying and sublime, the explanations that men advance tend to be colored with superstitious fear. When the surroundings of the people are awe-inspiring the response to these manifestations of grandeur are fear and reverence. This continued response becomes habit in the individual and custom in the group. As the usage is integrated, all those who do not respond to the terrible manifestations of nature with the customary degree of fear and reverence are regarded with suspicion. That is, the confident and the skeptical are constrained. Any attitude of curiosity or criticism is discouraged as essentially unrighteous and endangering the safety of the group. For this reason the primitive man persecutes any member of his tribe who, because of a confident or critical turn of mind, deviates too far from the paths prescribed by the established usages of the group. Thus does physical environment set the limits to human habitation, guide the movements of aimless migrations, stimulate or retard the development of civilizations; sometimes facilitating the easy communication of ideas and the exchange of goods, and other times impressing the minds of a people with a sense of its grandeur which

FIGURE 60. The Environment of the Desert.

finds ultimate expression in rigid usages or grotesque mythologies.

One final influence of physical environment upon the mind of man is suggested by Oscar Peschel.[53] The founders of the great monotheistic religions of the world, Zoroaster, Moses, Buddha, Christ, and Mohammed, belong to the subtropical zone. This zone is one which contains many vast deserts. "Every traveler who has crossed the deserts of Arabia and Asia Minor speaks enthusiastically of their beauties; all praise their atmosphere and brightness, and tell of a feeling of invigoration and a perceptible increase of intellectual elasticity; hence between the arched heavens and the unbounded expanse of plain a monotheistic frame of mind necessarily steals upon the children of the desert."[54] Forest scenery distracts the attention to a thousand forms and sounds, the sunbeams play through the openings in the trees on the trembling and shining leaves, there are marvelous forms of gnarled roots and branches, there is the creaking and the sighing, the whispering and the rustling of the trees together with the sounds and voices of animals and insects. But in the desert one is impressed with only the vast expanse of plain and over all the constant dome of the heavens.[55] Elijah retired into the desert. John the Baptist preached in the desert. Christ prepared himself for his career by passing forty days and forty nights in the desert. Mohammed lived for a long time as a shepherd and made frequent journeys across the desert.[56]

[53] *The Races of Man,* from the German, New York, 1894, pp. 314-318.
[54] *Ibid.*
[55] See figures 60 and 61.
[56] *Ibid.*

SUPPLEMENTARY READINGS.

BUCKLE, H. T.—*The History of Civilization in England.*
DEXTER, E. G.—*Weather Influences.*
HUNTINGTON, E.—*The Pulse of Asia.*
SEMPLE, E. C.—*The Influences of Geographic Environment.*
THOMAS, W. I.—*Source Book for Social Origins,* Part I.

FIGURE 61. A Bedouin Tent in the Desert.

VI

SOCIAL HEREDITY

Why is it that you have grown up to be an American? Why is it that the mere accident of being born, we will say in the state of Massachusetts, and being bred in that state, has made of you an American and not a Chinaman or an Indian? Aside from the physical characters of yellow or red skin, round head and straight hair, what constitute the differences between Americans and Chinamen or Indians are their differences in culture, customs, usages, ideals, art and literature. In the plastic years when you were growing up you were formed and molded by the suggestions and impressions that flooded you from all sides. Your developing consciousness found already established certain standards, usages, ways of doing and thinking. Some of these you were more or less at liberty to select and pick and choose, others you had to observe so and so and never otherwise. Your plastic mind was bent this way or that within the limits of its inherent adaptability, so that now, when you are mature, you have come to think any standards, usages, or customs which are different from the ones you are familiar with and which your social class is used to, are strange and unusual, even wrong or immoral. You think the Chinaman is queer, but he also thinks you are queer. And he is quite as justified in his opinion of you as you are in your opinion of him. The essential difference of your

diverse points of view is that your life experiences have been different.

The social medium which a child enters at birth, in which he lives, moves and has his being, is fundamental in determining his thought and action. The individual from childhood to ripest old age is more or less receptive to the social environment consisting of the standards, usages, and customs which the group has evolved out of its collective experience. "Rarely can the maturest minds so far succeed in emancipating themselves from this medium as to undertake independent reflection, while complete emancipation is impossible, for all the organs and modes of thought, all the organs for constructing thoughts, have been molded or at least thoroughly imbued by it."[1]

"The individual simply plays the part of the prism which receives the rays, dissolves them according to fixed laws and lets them pass out again in a predetermined direction and with a predetermined color."[2] We forget that the interpretation the child puts upon external things is never entirely *naïve* or *original.* It is a mistake to assume that each civilized individual's conduct of life is a purely logical process. The content of the human mind is largely determined by the social usages and conventions of class and age, which in turn refract impression and determine the final form assumed by the interpretation.[3] There are "experiences thousands of years old which have been inherited for generations as completed intuitions; destinies historic, and prehistoric, with their effects upon mental character and inclination, with their forms of thought and mode of reasoning;

[1] Gumplowicz, *op. cit.*, p. 157.

[2] *Ibid.*

[3] Chapin, *Education and the Mores*, p. 70.

sympathies, prejudices and prepossessions deeply seated and concentrated in the mind of the 'free' individual like countless rays in a focus. They live in him as thought, though the crowd imagines that, whether right or wrong, praiseworthy or blameworthy, it is he that cherishes them."[4] It is this mental precipitate of generations long gone that is condensed in the mind of one person and comprises the mental furniture which we acquire in the course of our life's experience. It is active in determining our explanations of our actions and always modifies our interpretation of the conduct of others.

Professor Cooley speaks of this social atmosphere into which we are born, including its organization into literature, art, and institutions, as the outside or visible structure of thought. Although the symbols, the traditions, and the institutions are projected from the mind, yet from the very instant of their projection, they react, controlling, stimulating, developing, and fix certain thoughts at the expense of others to which no awakening suggestion comes. Thus all is one growth. The "individual is a member not alone of a family, a class, a state, but of a larger whole reaching back to prehistoric man whose thought has gone to make it up."[5] In this social medium the individual lives as in an element, from which he draws the materials of his growth and to which he contributes whatever constructive thought he may express. The individual mind becomes a blank when separated from the stream of collective experience, but immersed in the great currents of men and ideas the individual grows, drawing from the common experience the material for its own life. This has led Professor Cooley to say, "The growth of the individual mind

[4] Gumplowicz, *op. cit.*, p. 158. [5] Cooley, *Social Organization*, p. 64.

is not a separate growth, but rather a differentiation within the general mind." It has led Professor Gumplowicz to say, "The great error of individualistic psychology is the supposition that man thinks. . . . The whole belief in the freedom of human action is rooted in the idea that man's conduct is the fruit of his thoughts and that his thoughts are exclusively his own. This is an error. He is not self-made mentally any more than he is physically. His mind and thoughts are the product of his social medium, of the social element whence he arose, in which he lives."[6]

If this social element into which we are born determines in large measure the course of our mental development, it is important to understand the process by which it has been formed and to know its limitations.

Men inherited from their brute ancestors certain instincts. But as life in society became increasingly complex, new situations arose which could not be met by instinctive reactions. Dispositions to perform a certain reaction to stimulus, dispositions which had been inherited, not acquired in the life of the individual, were obviously ill-adapted to direct the proper sort of reaction to a unique situation. Indeed, new experiences crowded upon one another with such rapidity that the temporary compromise of habit had often to supplant the more conservative guide,—instinct. Every moment brings necessities which must often be satisfied at once. Early men experienced need, and it was followed at once by a blundering effort to satisfy it. For example, mere instinct could not be depended upon to solve the problem of a warlike expedition. By trial and failure, new ways were devised; they were often clumsy and blundering

[6] Gumplowicz, *op. cit.*, pp. 156, 160.

FIGURE 62. Strange Customs. A widow following the custom of wearing her husband's skull strung from her back as a sign of mourning.

efforts to satisfy the need that instinct could not gratify. It is the method of rude experiment and selection* which produces repeated pain, loss, and disappointment. "The earliest efforts of men were of this kind. Need was the impelling force. Pleasure and pain, on the one side and the other, were the rude constraints which defined the line on which efforts must proceed. The ability to distinguish between pleasure and pain is the only psychical power which is to be assumed. Thus ways of doing things were selected, which were expedient. They answered the purpose better than other ways, or with less toil and pain. Along the course which efforts were compelled to go, habit, routine, and skill were developed. The struggle to maintain existence was carried on individually but in groups. Each profited by the other's experience; hence there was concurrence towards that which proved to be most expedient. All, at last, adopted the same way for the same purpose; hence ways turned into customs and became mass phenomena. Instincts were developed in connection with them. In this way folkways arise. The young learn them by tradition, imitation, and authority. The folkways, at a time, provide for all the needs of life then and there. They are uniform, universal in the group, imperative, and invariable. As time goes on, the folkways become more and more arbitrary, positive, and imperative. If asked why they act in a certain way in certain cases, primitive people always answer that it is because they and their ancestors always have done so. A sanction also arises from ghost fear. The ghosts would be angry if the living should change the ancient folkways."[7]

* See Appendix I.

[7] Sumner, W. G.—*Folkways*, 1906, pp. 2-3.

By this process of trial and failure, followed by the selection of those reactions which give the closest relation of means to ends, greatest satisfaction, channels of habit and predisposition are formed. Moreover, the oftener any action is repeated, the more firmly it becomes established and the less the conscious equivalent accompanying the action. The customary actions which are of frequent repetition become entirely unconscious. Thus it is that animals and human beings form habits.[8] Since consciousness of an action decreases with frequent repetition, its performance becomes so habitual that omission or contrary action releases strong emotions, usually feelings of intense displeasure. For example, if you acquire the habit of taking a nap after luncheon you find real pleasure in taking the nap, indeed you will become drowsy soon after the meal hour has passed, even though something may interfere with your usual routine. It is only after feelings of displeasure that you will admit any interference. The longer you keep the habit the greater the will power required to overcome your disposition to take your accustomed nap.

Now the process of custom forming is similar to that of habit forming, and the same psychological laws are involved. When activities dictated by habit are performed by a large number of individuals in company and simultaneously, the individual habit is converted into mass phenomenon or custom, if the group shows concurrent action in response to the same stimulus. These usages, customs or folkways, as the case may be, once established, form the standards of correct and proper conduct of life in society. As in the case of the individual habit, so with the social usage, repetition increases the

[8] McDougall, W.—*An Introduction to Social Psychology*, 1908, pp. 29, 43.

ease of performance, and frequent performance of the custom increases its permanence and rigidity. Just as in the case of the individual habit, with which interruption

From " L'Anthropologie. "

FIGURE 63. Deformation of Features by Congo Natives in submission to approved Styles.

of its usual course brings feelings of displeasure, so in the case of social usage, deviation from the customary performance of the act sets free emotions of anger or intense displeasure which may cause the punishment or persecution of the innovator. Custom in dress is often quite arbitrary.[9] To appear on the street in the fashion

[9] See figure 63.

of a former century would be to expose oneself to ridicule.

It nettles us to see a man wear a hat in doors in company with a lady; it is considered rude. We would feel very vigorous resentment towards any man who wore a hat in a church or at a funeral. To smack one's lips at the table seems to us disgusting. Yet the Indians consider it the height of bad taste not to smack one's lips when dining with a friend, for it would suggest that the guest did not enjoy the meal.[10] Thus the criterion of propriety of all human action is custom.

"A mode of behavior that does not conform to the customary manners, but differs from them in a striking way, creates, on the whole, unpleasant emotions; and it requires a determined effort on our part to make it clear to ourselves that such behavior does not conflict with moral standards. . . . The custom of habitually covering parts of the body has at all times led to the strong feeling that exposure of such parts is immodest. This feeling of propriety is so erratic, that a costume that is appropriate on one occasion may be considered opprobrious on other occasions; as, for instance, a low-cut evening dress in a street-car during business hours. What kind of exposure is felt as immodest depends always upon fashion. . . . There is no conscious reasoning why the one form is proper, the other improper; but the feeling is aroused directly by the contrast with the customary." [11]

If our ideas of what constitutes good manners, what is proper and in good taste, are entirely due to custom, it follows that where the life experiences of groups differ,

[10] Boas, *The Mind of Primitive Man*, p. 213.

[11] Boas, *op. cit.*, pp. 211-212.

their customs and usages will differ, and consequently there will be diverse standards in widely separated localities. This is just the case. The Eskimo regarded it as his duty to kill his aged parent. We have been reared under conditions which have been much less rigorous; consequently we regard the act with abhorrence; it is positively immoral to us. In Australia, a girl considers that honor requires her to be knocked down and carried off by the man who is to become her husband. If she is the victim of violence she is not ashamed. Eskimo girls would be ashamed to go away with their husbands without crying and lamenting, however glad they might be to go. It shocks them to hear that European women publicly consent in church to be wives, and then go with their husbands without pretending to regret it. Kaffirs ridicule the Christian love marriage. Where polygamy prevails, women are ashamed to marry men who can afford only one wife; under monogamy they think it disgraceful to marry men who have other wives. Among the Japanese the bond between child and father is regarded as most sacred. A man leaving father and mother to "cleave to his wife" would become a social outcast. For this reason the Japanese consider the Christian Bible immoral and irreligious.[12] We are not accustomed to eat dogs, yet among some primitive peoples dogs are regarded as great delicacies.[13] Thus the usages of a people may differ from those of another people to such a degree that what is proper and customary with one may be regarded as disgusting or immoral by the other. There can be no logical reason given for these differences in custom. Variance in standards of

[12] Sumner, *op. cit.*, pp. 109-110. [13] Boas, *op. cit.*, p. 215.

propriety in different groups is of purely traditional origin and character.

Professor Sumner has called this mass of social usage, custom, tradition, and superstition, which constitutes the essential dissimilarity in the cultures of two peoples, "folkways." The folkways are not creations of human purpose and wit; they are produced by the "frequent repetition of petty acts, often by great numbers acting in concert, or, at least, acting in the same way when face to face with the same need." This process produces habit in the individual and custom in the group. The folkways are like the instinctive ways of animals, which develop out of experience and are handed down by tradition admitting of no exception or variation, yet changing slowly within the same limited methods, and without rational reflection or purpose.[14] The folkways constitute that mass of social usage which controls all unconscious response to stimulus and action in accordance with custom. We become aware of folkways only when the usual performance of the act is interfered with, or when the act is performed in violation of the custom. Thus, wearing a hat in church violates the folkway which has accustomed us to seeing men sit uncovered in such places. It would be a mistake to think that this process of making folkways is ever superseded or changed. It goes on now just as it did at the beginning of life in human society.[15] Use and wont exert their force on all men always. They produce familiarity, and mass acts become unconscious. In modern times the factory system has created a body of folkways in which artisans live, and which distinguish the atmosphere of factory towns from that of commercial cities or agricultural villages.

[14] *Ibid.*, pp. 3-4.

[15] *Ibid.*, p. 35.

There is another level in consciousness which customs and usages attain. Certain folkways become the objects of thought when one group, through contact with another, comes to recognize that in certain details its customs differ from those of its neighbor. Conscious reflection is provoked, and, as a result, certain folkways are preserved and inculcated. These selected folkways become the mores.[16] Mores are the usages which have received the definite and positive commendation of the group. The sanction back of them is more than the sanction of mere use and wont, it is the sanction of conscious community approval. And yet, "The mores contain the norm by which, if we should discuss the mores, we should have to judge the mores."[17] The mores come down to us from the past in the same manner as folkways and other customs. "Each individual is born into them as he is born into the atmosphere, and he does not reflect on them, or criticize them any more than a baby analyzes the atmosphere before he begins to breathe it. Each one is subjected to the influence of the mores, and formed by them, before he is capable of reasoning about them."[18] For this reason the mores determine the content of the growing mind, and so, if one were to criticize them he would have to use in that criticism terms and traditions which the mores themselves had given current circulation. This is why the discussion of such established institutions as property and marriage does not immediately change our relations. Among the masses of people such a discussion produces no controversy. It is only among those who have emancipated themselves from the control of habit and custom that there is sufficient independence of thought upon these subjects to provoke

[16] Chapin, *op. cit.*, p. 76. [17] Sumner, *op. cit.*, p. 77. [18] *Ibid.*, p. 76.

controversy. For the great masses of mankind, mores are learned as unconsciously as we learn to walk and eat and breathe. The justification of them is that upon awakening to consciousness the individual finds the mores facts which already hold him in the bonds of tradition, custom, and habit.

To those composing the narrow margin of exceptionally rational and critical individuals, the mores are often a stumbling block of stupid insensibility, receiving their scorn and impatient anger. From this class emanate the original ideas which, when put into current circulation and given the stamp of public approval, slowly change the mores. For example, the comparatively new idea of evolution had at first a rather limited diffusion among the intellectual class. Gradually, the idea has filtered down through the mores of the masses, and, being rubbed down and smoothed off like an old coin, has taken the form of a summary and glib generalization that "men came from monkeys." The philosophical implication of the theory of evolution that there is only relativity in the changing flux of life processes, never any absolute standard of relations, is quite beyond the realm of mores. The domain of mores is one of fixed forms and inert customs. Mores are answers to the problems of life and not questions. Hence a world philosophy which represents itself as transitory, certainly incomplete, and liable to be set aside to-morrow by more knowledge, can never receive very widespread recognition. The majority of men want their conduct and thought guided by established rules and customs. They prefer to do and think with their fathers before them. To do anything else would require too great a mental effort.

From earliest times mores have been inculcated and taught. It has ever been one of the chief functions of education of the young to perpetuate the mores of the group.[19] The mores were familiar forms associated with group safety. The chief object of the brutally conducted initiation ceremonies of the natives of southeast Australia is to impress upon the boy the importance of the tribal traditions.[20] In primitive society children are constantly exhorted to follow the example of their parents in following the usages of the group.[21] Indeed, we must "not forget that the immemorial device of stationary societies to preserve their ancient order has been to steep the young in certain traditional wisdom."[22] The Institutes of Manu preserve the religious mores of the Hindoo. The Chinese Li-Ki, or Book of Rites, of the Confucian text, illustrates the effort to preserve mores. Here, from the rinsing of the mouth to the adjustment of one's leggings and shoe-strings, all acts are to be regulated in strict accordance with usage. Suetonius writes of the customary education of the Roman youth and finds fault with the new discipline of the Latin Rhetoricians which interfered with the customary instruction approved by "our ancestors."[23] Narrow and restricted religious mores were inculcated by the educational systems of the Middle Ages.[24] At the present time the content of the elementary school curricula of modern nations is largely one of traditional subjects.[25]

The perpetuation of this social heritage of folkways

[19] Chapin, *op. cit.*, ch. iii.

[20] Howitt, A. W.—*The Native Tribes of Southeast Australia*, pp. 530-542.

[21] Boas, *op. cit.*, p. 224.

[22] Ross, E. A.—*Social Control*, p. 165.

[23] Suetonius, *The Lives of Eminent Rhetoricians*, pp. 524-525, Thomson trans.

[24] Chapin, *op. cit.*, p. 56.

[25] *Ibid.*, ch. v.

and mores, custom and tradition, is by suggestion and imitation as well as by conscious inculcation. Under the conditions of life in primitive groups as well as under the more complex relations of modern society, men communicate with one another by rudimentary or developed methods of intercourse. In either case the same fundamental law of social psychology holds. The possibility of communication depends upon the density of population, and also upon the degree of development of the means of communication and the use made of those means. Where the population is relatively dense and people live in close touch with one another the spread of ideas is rapid. Isolated communities do not receive the new ideas for a long time. Hence it is that in style of dress the country people always tend to be behind the city people. If the means of communication are highly developed, then, even though the population is not dense, ideas and news will spread rapidly. For example, the telegraph spread the news of the battles of the Chinese-Japanese War, some years ago, throughout the length and breadth of our country, so that every little hamlet knew of the happenings and discussed them, whereas in China, many of the people living at a comparatively short distance from the scene of the conflict did not even know that their country was engaged in war; and yet China was much more thickly populated than the United States. In primitive society, the possession of superior language and the great facility in the use of this language, gave to one group the means of an intercourse which an inferior group lacked. It gave unity and coherence to its organization and furthered its development.

The most heightened phase of communication which rests on density of population is known as "The Crowd."

In the crowd, the close grouping of people, the shoulder to shoulder contact, furnishes a dense medium for the transmission of ideas and notions. In crowds, men and women are subject to swift contagion of feeling. Ideas spread like lightning. Suggestibility is heightened, for example, when a wave of applause sweeps over an audience. Thus crowds are impulsive, mobile, credulous, and readily influenced by suggestion. The images invoked in the mind of the crowd are accepted as realities. Crowds do not admit of doubt or uncertainty; they always go to extremes. Hence it follows that the morality of crowds, according to the suggestions under which they act, may be much higher or lower than the morality of the individuals composing them.[26] The emotional nature, the rapid contagion of feeling, the close contact, all tend to force upon the individual a sense of invincible power. The individual loses all sense of personal responsibility. He becomes merged with the crowd, and, as men are more alike emotionally than intellectually, the individual loses his identity. The feeling of responsibility which controls individuals when alone, disappears in the wild gusts of passion that sweep over the mob. The individual does things and gives way to impulses which if alone he would have controlled. Thus, in the crowd, all the conditions which determine the degree of communication are intensified, with the result that impulsive and emotional activity goes beyond the bounds that are under normal conditions set by rational control.

When the community is densely populated, and means of communication have been developed whereby usages are perpetuated and new ideas spread, the further trans-

[26] Giddings, F. H.—*Democracy and Empire*, p. 56; and Le Bon, G.—*The Crowd.*

mission of intelligence depends upon suggestion and imitation. "Suggestion is a process of communication resulting in the acceptance with conviction of the communicated proposition in the absence of logically adequate grounds for its acceptance."[27] Suggestion is an incitement to act that is implanted or aroused, while the individual affected remains unaware of what is happening.[28] The suggestion does not have to take the shape of formal language; it may be conveyed by mere gesture or interjection. During the Great Plague in London, when in the streets lay heaps of dead bodies, and the terrified imagination of the poor people furnished them with all sorts of wild material to work upon, half-crazed persons thought they saw apparitions of flaming swords held in the air above the city. A woman pointed to an angel clothed in white, and brandishing a sword over his head. She described it with such realism that the crowd about her believed, and, "*Yes!* I see it plainly, says one, there's the sword as plain as can be; another saw the angel; one saw his very face and cried out, What a glorious creature he was! One saw one thing and one another. I looked as earnestly as the rest, but, perhaps, not with so much willingness to be imposed upon; and I said indeed, that I could see nothing, but a white cloud, bright upon one side, by the shining of the sun on the other part. The woman endeavored to show it to me, but could not make me confess that I saw it, which, indeed, if I had, I must have lied . . . she turned to me, called me a profane fellow, and a scoffer, told me that it was a time of God's anger, and dreadful judgments were approaching, and that despisers, such as I, should wonder and perish."[29]

[27] McDougall, *Social Psychology*, p. 97.

[28] Giddings, *Descriptive and Historical Sociology*, p. 145.

[29] Daniel De Foe—*A Journal of the Plague Year*, pp. 25-28.

This illustration shows that all people are not equally subject to suggestion. "Suggestibility" varies not only according to the topic and according to the source from which the proposition is communicated, but also with the condition of the subject's brain from hour to hour. "The least degree of suggestibility is that of a wide-awake, self-reliant man of settled convictions, possessing a large store of systematically organized knowledge which he habitually brings to bear in criticism of all statements made to him."[30]

McDougall points out that the degree of suggestibility is affected by the following conditions:[31]

(1) Abnormal states of the brain, such as hysteria, hypnosis, normal sleep, and fatigue. Under these conditions individuals readily respond to suggestions which in normal waking hours they would ignore.

(2) Deficiency of knowledge or convictions relating to the topic in regard to which the suggestion is made, and an imperfect organization of knowledge. The layman gives credence to, and acts upon, the suggestion of the churchman or the scientist because the matters with which the churchman and the scientist deal are beyond the scope of his information.

(3) The impressive character of the source from which the suggested proposition is communicated. The child receives as true the stories which a parent tells it. The populace believes the prophecy of a leader.

(4) Peculiarities of character and native disposition of the subject. Emotional people, or those of unstable nervous temperament, are more liable to act with great credulity upon the most extravagant suggestion, than

[30] McDougall, *op. cit.*, pp. 97-98. [31] *Ibid.*

are people of a more matter-of-fact turn of mind. The negro's openness to suggestions of a mysteriously religious sort is an illustration.

Customs are perpetuated by suggestion in so far as the usages of a group are communicated from one member to another by inciting persons to perform customary acts without being aware that they are following a particular method. But the social heritage of community usages is preserved and learned by imitation also. The copying by one individual of the actions, the gestures, the bodily movements of another, is imitation. The most brilliant study of the effect of imitation upon the activities of men, was made by Gabriel Tarde in his book, "The Laws of Imitation." Tarde, however, does not clearly distinguish between imitation and suggestion. It is true that suggestion blends into imitation, that imitation is a process similar in general to suggestion, the principle difference being one of degree of consciousness. Some imitative acts attain a higher level in consciousness than those which result from suggestion. We are conscious of the act which invites imitation, but not aware of the incitement to act aroused by suggestion. Tarde uses the word imitation to cover a whole range of acts which are a result of both imitation and suggestion.

Imitation is a conservative force as well as a progressive force. It is a conservative force in so far as it leads each generation to imitate its ancestors and to preserve with but little change the usages and the customs of its forefathers. Imitation is a progressive force when ideas generated by exceptionally gifted persons within the people spread throughout the whole group. Imitation acts also as a factor in progress when ideas and practices

of one people spread by imitation to another people.[32] The imitation of one people by another has been a principal condition of the progress of civilization in all its stages. The peoples of western Europe imitated the Romans, their religion, their laws, their architecture and their material civilization. The Romans imitated the Grecian world which they had conquered. In modern times Japan has deliberately imitated certain features of European civilization.

Imitation tends to spread in geometrical progression.[33] The spread of any culture element, a belief, an art, a convention, a sentiment, a habit or attitude of mind of any kind, tends to proceed in geometrical progression, because each individual or body of individuals that imitate the new idea and embody it in practice, becomes the center of radiation of the idea to all communicating individuals or groups. Moreover, with each step in the spread of the idea over a wider area to larger numbers of people, the power of mass-suggestion grows.[34] The rate of spread is marvelous. A new style of wearing the hair, such games as ping-pong and diabolo, appear mysteriously, become all the rage for a period, then disappear as suddenly as they came. Naturally this spread of imitation is conditioned by the density of population, the degree of development of the means of communication, and the use made of those means. Because of this law of imitation, a higher degree of cultural uniformity is possible in the United States than in Africa. Local dialects are gradually passing away in civilized nations.

It is owing to contra-imitation that fashions are so

[32] McDougall, *op. cit.*, pp. 334-335.

[33] Tarde, G.—*The Laws of Imitation*, Parsons trans., 2nd. ed., pp. 19-20, 115.

[34] McDougall, *op. cit.*, p. 335.

fleeting, for, as soon as a fashion has spread to a certain proportion of the total population, the operation is reversed and contra-imitation begins to make for its abolition and replacement by another. For example, the stylish mistress will not continue to wear the new shape of hat, however becoming to her, after the colored cook and her humbler neighbors have begun to imitate it. Each person is moved not alone by the prestige of those whom he imitates, but also by the desire to be different from the mass who have not yet adopted the style. Most Englishmen would scorn to kiss and embrace one another or to gesticulate freely, if only because Frenchmen do these things; they would not wear their hair either long or very closely cropped, because Germans do so. Thus contra-imitation makes societies homogeneous.[35]

Although imitation spreads in all directions in geometrical progression, it spreads most easily and most rapidly from above to below, from the higher to the lower social classes.[36] "Given the opportunity, a nobility will always and everywhere imitate its leaders, its kings or suzerains, and the people, likewise, given the opportunity, its nobility."[37] The impression must come from a source enjoying prestige, an individual or a collective personality that is stronger, more complex, or more highly developed. "But in reality, the thing that is most imitated is the most superior one *of those that are nearest.* In fact, the influence of the model's example is efficacious inversely to its *distance* as well as directly to its superiority. *Distance* is understood here in its sociological meaning. However distant in space a stranger may be, he is close by, from this point of view, if we have numerous and daily relations with

[35] *Ibid.* [36] Tarde, *op. cit.*, pp. 215-224. [37] *Ibid.*, p. 217.

him and if we have every facility to satisfy our desire to imitate him. This law of the imitation of the nearest, of the least distant, explains the gradual and consecutive character of the spread of an example that has been set by the highest social ranks. We may infer, as its corollary, when we see a lower class setting itself to imitating for the first time a much higher class, that the distance between the two has diminished."[38] Whether the ideas of an individual shall be accepted by his fellow-countrymen depends not so much upon the nature of those ideas as upon the degree of prestige which that individual has or can secure. For example, a far-sighted social reformer who has given years of study to some problem of great importance to a community, may not get a hearing with the most interested party, the public, while some political demagogue, who boasts party achievements, may secure attention.

An idea or a practice, once imitated by a people, tends to spread to the maximum extent possible under the given conditions of society. It tends to reach a maximum degree of diffusion or saturation, "and only recedes or disappears under the influence of some newly introduced antagonistic rival."

The imitation of one person by another or of one social class by another, does not result in precise reduplication of the practice. That is, imitation is never exact. There is always some individual variation, some improvement or some neglected aspect of the model. This is what is meant by saying that imitation is refracted by its media. The cook does not imitate exactly the hat of her mistress. She gets the general effect of the stylish shape, but the hat is reproduced in cheaper material. Imitations are

[38] *Ibid.*, p. 224.

modified by passing from one race to another. Myths are changed in this way.[39]

For a time the course of imitation is between the past and the present. Then the current changes, and the course of imitation is between contemporaries. For what Tarde calls "custom imitation" is substituted "fashion imitation."[40] "To down-transmission or *social heredity* succeeds cross-imitation or *conventionality*. In the latter period the old is distrusted and the new has the presumption in its favor. In the former period the recent is weak, the presumption is with the ancient, and the maxim of statesmanship is, *Let things alone.*"[41] Custom and fashion imitation are in operation simultaneously, only in different parts of the social system. Usually, however, custom imitation is the more prevalent and the more powerful of the two forms. For, "Imitation . . . that is engaged in the currents of fashion is but a very feeble stream compared with the great torrent of custom."[42] Thus, for men to change slightly the fashion of their trousers by wearing a cuff on the end of each pantaloon leg, invokes comparatively little discussion, but an attempt to revert to the colonial habit of short knee breeches and silk stockings, would rouse no end of objection and criticism. The one is merely a change in fashion imitation, the other would be an interruption of custom imitation.

Imitation modifies a people's civilization in two different ways; by substitution or accumulation.[43] "The new culture element spreads by imitation among the people and either conflicts with, drives out, and supplants some

[39] *Ibid.*, p. 22.
[40] *Ibid.*, ch. vii.
[41] Ross, *op. cit.*, p. 187.
[42] Tarde, *op. cit.*, p. 244.
[43] McDougall, *op. cit.*, p. 336.

older traditional elements or constitutes an extension, complication, and enrichment of the existing tradition. Norman-French was largely imitated by the English people, and so became in large part incorporated with the English language. The religion of Buddha was adopted by the Japanese people, and partially fused with rather than supplanted, their national Shinto religion of ancestor-worship."[44] In this way the new is amalgamated with the old, and usages or traditions change very gradually under the strain of meeting new conditions and new needs. But in the change the ascendancy of the old form still immensely outweighs the prestige of recent innovations. "Passive obedience to ancestral orders, customs, and influence, comes to be not replaced, but neutralized in part, by submission to the pressure, advice, and suggestions of contemporaries. In acting according to these last-named motives, the modern man flatters himself that he is making a free choice of the propositions that are made to him, whereas, in reality, the one that he welcomes and follows is the one that meets his preëxistent wants and desires, wants and desires which are the outcome of his habits and customs, of his whole past of obedience."[45] With regard to this point Professor Boas reminds us that we are only too apt to forget entirely the general, and, for most of us, the purely traditional basis of our reasoning, and to assume that our conclusions are absolute truth. In so doing we commit the error of less civilized peoples. They are more easily satisfied than we are of the truth of their conclusions. Their fallacy lies in assuming the truth of the traditional element which enters into their explanations; consequently they accept

[44] *Ibid.*, pp. 336-337.
[45] Tarde, *op. cit.*, p. 246.

as absolute truth the conclusions based upon this reasoning.[46]

For these reasons the difference in mode of thought of primitive man and civilized man seems to consist largely in the difference of character of the traditional material with which the new perception associates itself. When a new experience enters the savage mind, the same process which we observe among civilized men brings about an entirely different series of associations, and consequently results in a different type of explanation. A sudden explosion may associate itself in the mind of the savage with tales which he has heard of the mythical story of the world, and consequently will be accompanied by superstitious fear. The civilized man will simply associate the explosion with a certain amount of powder or dynamite. Hence the explanations of the phenomena given by the two individuals will differ. Among both primitive and civilized groups the average person does not carry to completion the attempt at causal explanation of phenomena, but carries it only far enough to amalgamate it with other previously known facts. It is obvious, then, that the character of this traditional material determines the result of the whole process. It determines what our interpretation of life experiences will be. Herein, also, lies the influence of the dominant scientific theory upon the character of scientific work.[47]

"There is an undoubted tendency in the advance of civilization to eliminate traditional elements, and to gain a clearer and clearer insight into the hypothetical basis of our reasoning. It is therefore not surprising, that, with the advance of civilization, reasoning becomes more and more logical, not because each individual carries out his

[46] Boas, *op. cit.*, pp. 205-206. [47] *Ibid.*, pp. 203-204.

thought in a more logical manner, but because the traditional material which is handed down to each individual has been thought out and worked out more thoroughly and more carefully. While in primitive civilization the traditional material is doubted and examined by only a very few individuals, the number of thinkers who try to free themselves from the fetters of tradition increases as civilization advances."[48]

It is evident that custom imitation is the conservative aspect of imitation, and is a much more powerful force than fashion imitation. The former insures the preservation of usages, the inheritance of social practices. Imitation is a conservative force in so far as it coöperates with habit. For habit sets narrow limits to innovations which imitation would introduce. There is a tendency for all mental processes to become easier by repetition, a tendency to the formation of habits of thought which become more and more fixed in the individual as he grows older, a tendency of each generation to imitate chiefly its predecessor rather than any foreign model.[49] The familiar, the local, the popular ways of thought and action are the first presented to the child. Under the influence of these usages, a strong bias is determined, earliest habits are formed, so that the individual is already molded to the pattern of his class, his locality, when he comes under the influence of foreign models of imitation. He is capable of but little change, and, save in a small degree, is refractory to their influence.

This tendency to the formation of habits and social usages becomes a tendency to convert means into ends. With many "persons not given to reflection on and analysis of their motives, the ends of their actions seldom come

[48] *Ibid.*, p. 206.

[49] McDougall, *op. cit.*, p. 347.

clearly and explicitly to consciousness." The actions of these people are "largely determined by blind instinctive impulses on the one hand, and on the other, by simple acquiescence in, and imitation of, the kinds of activity they see going on about them." [50] Although many women spend much time and energy in keeping their houses tidy and in order, they fail to recognize the end of this activity, namely, domestic comfort and happiness. Dress, obviously a means to the end of keeping in bodily health and comfort, has often become an end in itself, for men and women array themselves in fantastic garments which ignore both health and comfort.

In collective thought and action the tendency to convert means into ends is marked. A member of a group is not likely to raise any question regarding an activity which he finds faithfully observed by all his fellows, although he may criticize an activity practised by only a few of his companions. Usually, "the mere fact that his fellows observe the practice is sufficient to put it beyond criticism" and to lead the individual to regard it as an end in itself. This is one of the most important principles of the formation of custom. The ends or purposes of many customs are lost in the mists of antiquity. For whatever purpose it was originally instituted, a custom when once established becomes in some degree an end in itself. It is followed out of mere habit. Men are often prepared to maintain it at great cost of effort and discomfort, long after it ceases to serve any useful end. For this reason we find that meaningless rites continue to surround almost all ancient institutions.[51]

By means of imitation, practices tend to survive long

[50] McDougall, *op. cit.*, p. 349. [51] *Ibid.*, p. 350.

after their original significance has been forgotten. In many cases the usages which have survived the memory of their significance, have been "interpreted and given new meaning by generations that found themselves performing them in blind obedience to tradition." An interesting illustration of vestigial remnants of an earlier culture is afforded by surviving forms of marriage by capture among the peasantry of various European countries.[52] In parts of Europe there survives a reminiscence of another form of marriage, namely, marriage by purchase. In this, the bridegroom gives to the parents of his bride a few grains of corn, thus carrying out the fiction of purchase. Most of the old-fashioned village festivals are survivals of pagan rites and ceremonies, by means of which our ancestors honored or propitiated the spirits and divinities who were thought to preside over the processes of nature most directly connected with their well-being. The May Day festival is probably a survival from the rites by which the people sought to propitiate the spirit of the crop.[53]

When means are converted into ends, and usages are performed in blind obedience to tradition long after their usefulness is past; when there is a mass of mechanism, conventionalism and ritualism; when the spirit and the symbol are no more vitally connected, the symbol becoming an empty shell which supplants rather than conveys reality; when customs become rigid; we reach a state of social organization which Professor Cooley has called "formalism." Religion becomes formal as soon as ritual ceases to be a means to the end of purity and sin-

[52] Marriage by capture was an early marriage system among primitive peoples in which the male went outside of his own local group and captured a woman from some other group, who thereby became his wife.

[53] Frazer, J. F.—*The Golden Bough.*

cerity of worship, and is regarded as an end in itself. The ceremonials of religion were originally instituted to edify our spiritual natures, to symbolize high ideals. When people follow these ancient rituals not so much out of a desire to contemplate high ideals of character and service, as to look with curiosity upon the entertaining ceremony and the fashion of others' attire, the practice becomes hollow and meaningless. Formalism is psychically cheap. It substitutes the outer and the more tangible for the inner and the fleeting. It is capable of being held before the mind without the strain of fresh expense of thought and feeling. It is easily impressed upon the multitude.[54] Professor McDougall sums up the importance of social heredity as follows:

"The mental constitution of man differs from that of the highest animals chiefly in that man has an indefinitely greater power of learning, of profiting by experience, of acquiring new modes of reaction and adjustment to an immense variety of situations. This superiority of man would seem to be due in the main to his possession of a very large brain, containing a mass of plastic nervous tissue which exceeds in bulk the sum of the innately organized parts and makes up the principal part of the substance of the cerebral hemispheres. This great brain, and the immense capacity for mental adaptation and acquisition implied by it, must have been evolved hand in hand with the development of man's social life, and with that of language, the great agent and promoter of social life. For to an individual living apart from any human society, the greater part of this brain and of this capacity for acquisition would be useless and would lie dormant for lack of any store of

[54] Cooley, *op. cit.*, pp. 342-350.

knowledge, belief, and custom to be acquired or assimilated. Whereas animal species have advanced from lower to higher levels of mental life by the improvement of the innate mental constitution of the species, man, since he became man, has progressed in the main by means of the increase in volume and improvement in quality of the sum of knowledge, belief, and custom, which constitutes the tradition of any society. And it is to the superiority of the moral and intellectual tradition of his society that the superiority of civilized man over existing savages and over his savage forefathers is chiefly, if not wholly, due. This increase and improvement of tradition has been effected by countless steps, each relatively small and unimportant, initiated by the few original minds of the successive generations and incorporated in the social tradition through the acceptance or imitation of them by the mass of men. All that constitutes culture and civilization, all, or nearly all, that distinguishes the highly cultured European intellectually and morally from the men of the stone age of Europe, is then summed up in the word 'tradition,' and all tradition exists only in virtue of imitation; for it is only by imitation that each generation takes up and makes its own the tradition of the preceding generation; and it is only by imitation that any improvement, conceived by any mind endowed with that rarest of all things, a spark of originality, can become embodied within the tradition of his society." [55]

SUPPLEMENTARY READINGS.

Boas, F.—*The Mind of Primitive Man.*
Cooley, C. H.—*Social Organization.*

[55] McDougall, *op. cit.*, pp. 327-328.

Giddings, F. H.—*Descriptive and Historical Sociology.*
Giddings, F. H.—*Democracy and Empire.*
Gumplowicz, L.—*The Outlines of Sociology.*
Le Bon, G.—*The Crowd.*
McDougall, W.—*An Introduction to Social Psychology.*
Ross, E. A.—*Social Control.*
Sumner, W. G.—*Folkways.*
Tarde, G.—*The Laws of Imitation.*

VII

RACES AND PEOPLES

In the thousands of years that elapsed before the historical period began, that continuing tendency to vary which had already differentiated the animal kingdom into genera and species, was operating to differentiate mankind into varieties or races.[1] Associated in groups, the early men of the Paleolithic and Neolithic periods, moving from one territory to another under the pressure of environmental changes, met and conquered or else intermarried with other primitive racial groups. From this process of association, intermixture, and adaptation to the necessities of climate and geographic environment, certain characteristics emerged as stable physical peculiarities of large populations. To-day we distinguish a yellow-skinned straight-haired race, a black-skinned woolly-haired race, and a fair-skinned curly-haired race.

But before we can identify any population group as a true race we must show that certain traits or stable physical characters which it possesses are distributed separately, are associated into types, and finally, we must show the hereditary character of these types.[2] For example, in the first place, we must show that such a trait as blondness is diffused among large numbers of a population; in the second place, that blondness is more often associated with tall stature than with short stature, thus

[1] Giddings, *Principles*, p. 230.

[2] Ripley, W. Z.—*The Races of Europe*, pp. 104-105.

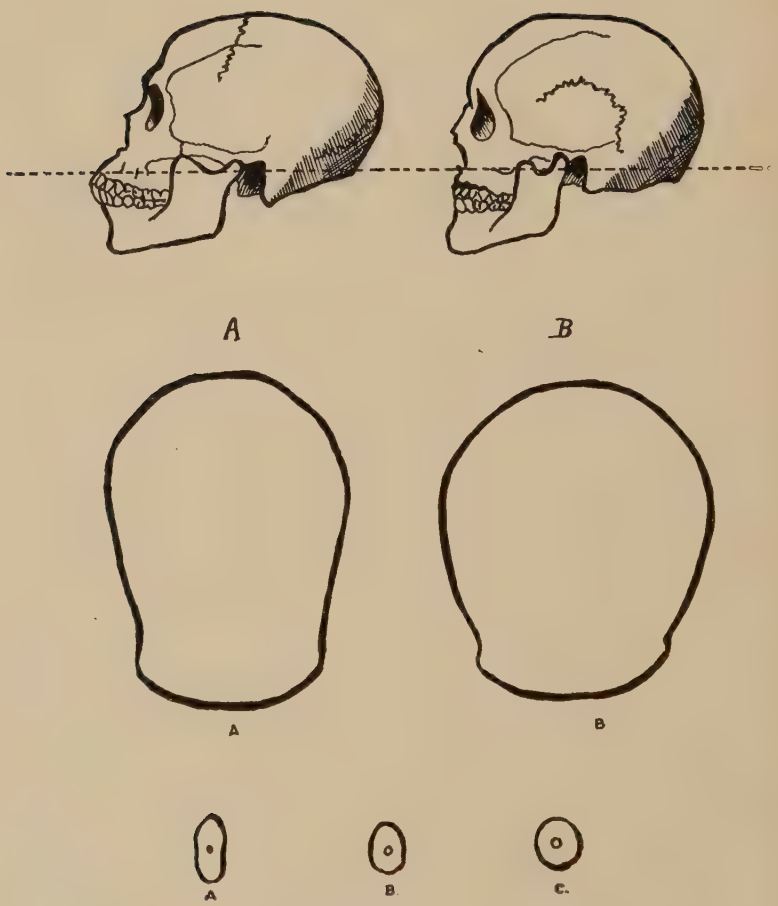


FIGURE 64. Diagram illustrating Facial Angle, Head Form and Hair Form. Upper cuts: A, prognathic jaws; B, orthognathic jaws. Middle cuts: A, dolichocephalic or long skull, in which width is about 75 per cent. of length; B, brachycephalic or round skull, in which width is about 85 per cent. of length. Lower cuts: A, elliptical cross-section of the woolly, frizzly or kinky type of hair; B, slightly elliptical cross-section of the curly or wavy type of hair; C, cylindrical cross-section of lank or straight type of hair.

giving us a tall blond type; and in the third place, we must show that this type of tallness and blondness when characteristic of parents is inherited by their children. The Chinese are a true race in accordance with these distinctions because such characters as round head, straight hair, yellow skin and almond eyes are usually found to be the combination of traits which the average Chinaman possesses; moreover, the children of the average Chinaman also possess these traits.

The problem of the origin of races is well-nigh impossible of solution because the facts relating to the gradual differentiation of racial traits are lost in the darkness of prehistoric ages. When history began, men found themselves already possessed of those characteristics of skin color, hair form, and head shape, which serve as the marks of race. We must base our explanation of this process largely upon carefully framed scientific theory.

In the present stage of our knowledge of this complex problem, the following factors must be considered in any theory of race origins. The most highly developed extinct anthropoid apes have been found in fossil remains in Europe. The Pithecanthropus was found in Java. The Neanderthal skull and the Heidelberg jaw were found in the valley of the Rhine. Of living men, the lowest in culture and brain capacity, are found in Australia, Tasmania, and Africa. Of these lowest types of surviving men, some are dolichocephalic[3] (long-headed) and others are brachycephalic (round-headed). The great area of distribution of the dolichocephalic, prognathic[3] (marked projection of upper and lower jaws beyond the line of the face), woolly, frizzly or kinky-haired, black men, is south of the equator—in Australia and

[3] See figure 64.

From Ripley, "The Races of Europe."

FIGURE 65. Color of Skin as distributed over the World.

From Ripley, "The Races of Europe."

FIGURE 66. Head Form as distributed over the World.

Africa.[4] The great area of distribution of the brachycephalic, narrow-eyed, lank or straight-haired, yellow or red-skinned men, is eastern Asia and western America, chiefly north of the equator along the semi-circular shoreline of Asia and America.[4] The great area of distribution of the mesocephalic (medium-headed), orthognathic (where there is but slight projection of upper and lower jaws beyond the line of the face), straight and wavy-haired, brown or white men, is a broad zone from Polynesia in the Pacific, northwestward through southwestern Asia and northern Africa and most of the continent of Europe.[4] These peoples occupy a zone which coincides with that in which the richest remains of prehistoric man have been found. A large proportion of European whites are relatively dolichocephalic; another large proportion are relatively brachycephalic. According to Professor Giddings, any theory of race should accommodate all these points.

The word race is popularly associated with color of skin. This classification, however, is not satisfactory. Other distinguishing racial marks such as shape of head, hair form, and facial angle must be considered. Some of these traits occur singly, but often they occur in combinations. We find that the peoples popularly known as the "Yellow Race" have a relatively stable combination of traits so that we find yellow skin usually associated with straight or lank hair, narrow eyes, and a relatively round or broad head.[5] The peoples commonly called the "Black Race" have a fairly stable combination of black skin, with woolly or kinky hair, heavy jaws protruding beyond the other features, and relatively long heads.[6] On the other hand, the so-called "White Race" possesses a

[4] See figures 65 and 66. [5] See figure 67. [6] See figure 68.

combination of traits which are by no means invariable characteristics. Thus, while members of the White race are usually fair-skinned, we find that there are gradations from a dark skin tint that is almost black, all the way through the various degrees of blondness to a yellowish colored skin; while most members of the White race are neither very broad headed nor very long headed, there are individuals who are as long headed as the Negro and others who are as round headed as the Chinaman; in hair form, the members of the White race show variations all the way from straight almost lank hair to frizzly or almost kinky hair. The White race seems therefore to be more variable than either of the other two great divisions of mankind.

Because the White race seems to be more variable in its traits than either of the other two races, Professor Giddings considers that it is the most direct projection of the original race, that it is the variable plastic race coming down from earliest paleolithic times. He maintains that this hypothesis is the simplest and agrees with more facts than any other theory of race origin. He accounts for the origin of the Yellow and Black races upon the hypothesis that one contingent of the original nondescript race with a tendency to vary, worked its way into a favorable location, where, in the course of centuries, natural selection operated to make it markedly dolichocephalic, frizzly-haired, and black; while another contingent of this original plastic race with a tendency to vary, worked its way into a favorable location, and there, in accordance with the same selective process, became markedly brachycephalic, almond-eyed, lank-haired, and yellow in skin color. While this theory does not take immediate notice of color gradations such as brown,

and red, it gives an admirable distribution geographically, and besides this, gives a correlation between head form and hair form. If now, we substitute Professor Giddings' nomenclature for the popular terms black, white, and yellow, the system of racial classification assumes the following form:

I. The Australian-African Group.

Characteristics: black skin, dolichocephalic, prognathic, woolly or frizzly-haired (cross-section of hair very elliptical).[7]

Area of distribution: Australia and Africa south of the equator.

II. The Polynesian-European Group.

Characteristics: fair skin, mesocephalic orthognathic, straight or wavy hair (cross-section slightly elliptical).

Area of distribution: broad zone from Polynesia north westward through southwestern Asia and northern Africa and most of the continent of Europe.

III. The Asian-American Group.

Characteristics: yellow or red skin, brachycephalic, narrow-eyed, lank or straight-haired (cylindrical in cross-section).

Area of distribution: eastern Asia and western America, chiefly north of the equator along the semicircular shore-line of Asia and America.

This hypothesis agrees with the conditions which were first laid down. The Polynesian-European group occupies at the present time that zone of territory which

[7] See figure 64.

From Ripley, "The Races of Europe."

FIGURE 67. Brachycephalic Asiatic Types; Uzbeg, Kiptchak and Kara-Kirghez.

extends from Java on the southeast to the valley of the Thames on the northwest. In this zone the traces of earliest man have been found. If these traces indicate that this region was his original habitat, then man spread over the earth starting from this zone.[8] If contingents of the original race wandered from this zone into new localities, and were prevented from crossing by environmental barriers they would become different from the original type, the one having wandered north into a colder clime, the other south into a warmer clime. Then, in the course of time, these two groups would become differentiated more widely from each other than from the original type. This we find to be true. The round-headed lank-haired peoples of the North are separated by an intermediate type from the long-headed curly-haired peoples of the South.

Now by the same reasoning, the original group, the intermediate and plastic type, would become in some way differentiated according as part went southeast or northwest, and these northwestern and southeastern groups would tend to differ somewhat although transmitting the characteristic head form. That is, different sections of the same general racial group would show slight variations from the stable peculiarities of the larger racial group of which they were parts. This has been the case.[9] In the southeast the brunette of southern Europe becomes the brown in Polynesia, while in the northwest the prevailing white of Europe becomes the pronounced blond of the Baltic regions. In the far southeast, the characteristics of long head and kinky hair are extreme in Australia and Tasmania, because of long isolation. We discover that in the other direction also there are

[8] See figure 69.

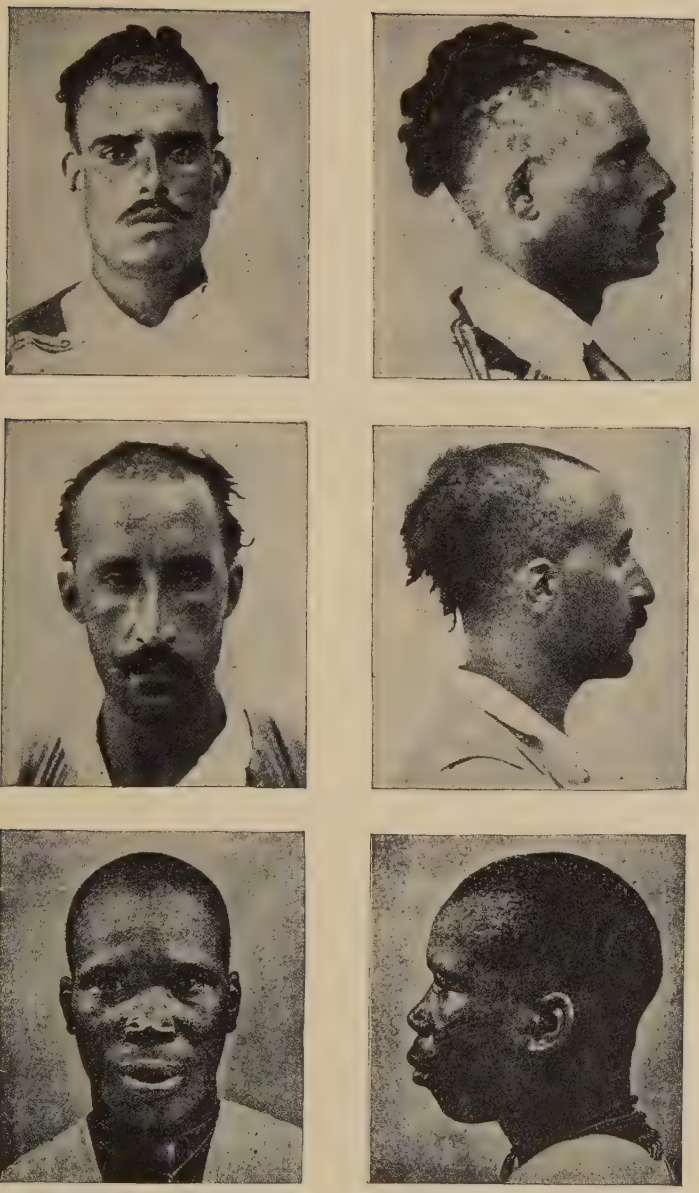
[9] See figure 70.

blacks with long heads and kinky hair, blending off in Africa to the Polynesian type from inter-breeding. All this agrees with our original hypothesis.

For the purposes of our study of social evolution we may dispense with any further examination of the varieties of the Australian-African group and of the Asian-American group, and may concentrate our attention upon

FIGURE 69. Zone of Distribution of Original Undifferentiated Race. (According to Giddings.)

the varieties of the Polynesian-European group. The European part of this race may be divided into two main divisions. One of these is relatively long-headed and dark-complexioned; this division has been called the Eur-African group. The other is relatively round-headed, light-complexioned, and inhabits Europe west of the Ural



From Ripley, "The Races of Europe."

FIGURE 68. Dolichocephalic African Types; Berber and Negro.

Mountains, and Asia immediately east of the Ural Mountains; this division has been called the Eur-Asian. Geographic terms are most conveniently used in this nomenclature because they give a definite sense of location. When we further examine the Eur-African, or long-headed European peoples, we find that those in the northwestern portion of Europe are blond, while the long-headed peoples living by the Mediterranean basin are dark. A similar study of the round-headed or Eur-Asian peoples of Europe reveals the fact that those inhabiting the Alpine region are relatively dark, while the inhabitants of the Danubean region and the northern slopes of the Alps are of lighter complexion shading into the coloring of the Baltic population. In accordance with this system of classification, the population of Europe is divided by Giddings into the following racial types:

I. The Eur-African Race (relatively long-headed, blond to dark complexion).

1. *The Baltic Race.*[10]

Characteristics: light blond type, very light hair and blue eyes, long head and face, tall stature, narrow aquiline nose.

Area of distribution: the section of northwestern Europe near the Baltic Sea,—the general area inhabited by the Teutonic peoples.

2. *The Mediterranean Race.*[10]

Characteristics: brunette type, hair dark brown or black and eyes dark, head and face long, medium and slender stature, rather broad nose.

Area of distribution: in southern Europe south of

[10] See figure 71.

the Pyrenees, along the southern coast of France and Italy, including Sicily and Sardinia. (The Baltic race of Giddings is the same as the Teutonic race of Ripley, and both Ripley and Giddings use the term Mediterranean to designate the dark long-headed race of southern Europe.[11])

Some authorities regard the Mediterranean race as the living representative of the most ancient peoples of Europe.[12] The population of Europe in the early and late stone ages was long-headed. The substratum of paleolithic and neolithic remains indicates that there existed an ancient dolichocephalic race widely distributed over Europe. There was the short-statured Neanderthal race and the taller and more finely molded Cro-Magnon race. Specialists have identified many other varieties, but all skull remains point to the existence of this early race with long heads.

II. The Eur-Asian Race (relatively round-headed).

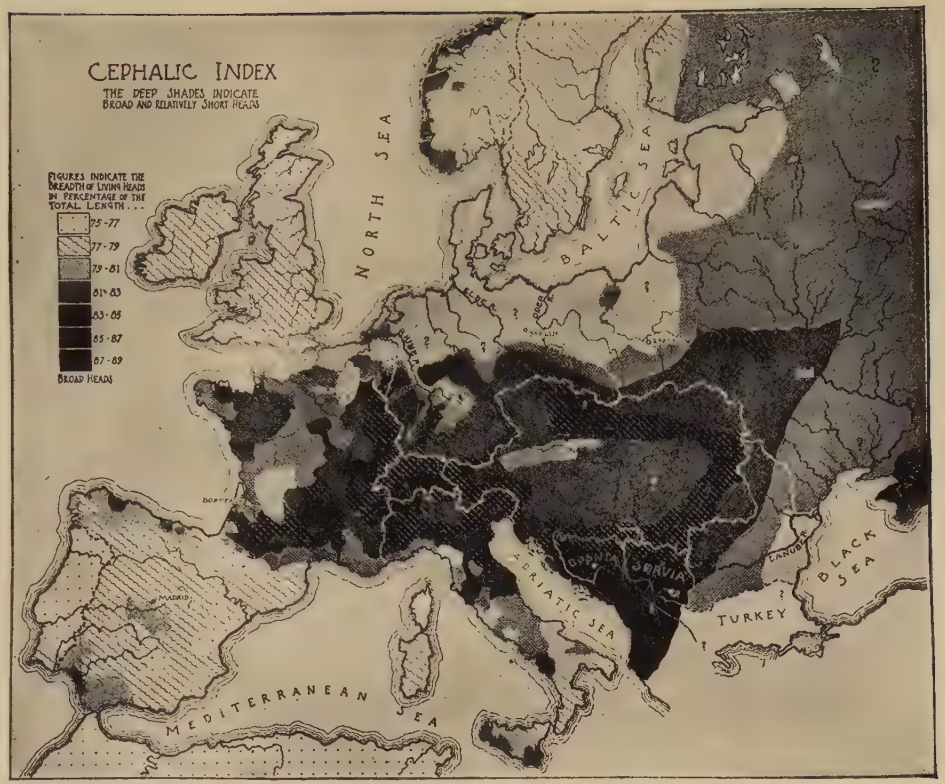
1. *The Alpine Race.*[13]

Characteristics: chestnut hair with hazel gray eye, round head and broad face, medium stocky stature, and variable but rather broad, heavy nose. (A type intermediate between the Baltic and the Mediterranean.) Its peculiarities appear most frequently when the type is found in greatest purity, isolated in a mountain area. The ancient Alpine race may have been exterminated in the lowlands and the rem-

[11] For description of these racial types, see Ripley, *The Races of Europe*, pp. 120-130.

[12] Ripley, *op. cit.*, pp. 461-465.

[13] A relatively fair type. See figure 71.



From Ripley, "The Races of Europe."

FIGURE 70. Head Form as distributed over Europe.

nants driven into the mountain fastnesses by the energetic Baltic race.[14]

Area of distribution: central France and southern Alpine highlands.

2. *The Danubean Race.*

Characteristics: blond, often red-haired, blue-eyed, round head and relatively broad face, of tall, heavy build. This race has played a most important part in history, variously called the Achæans, the Hellenic Greeks, and the Belgæ.

Area of distribution: the northern Alpine highlands, and the entire Danube valley.

It is probable that a round-headed white stock working westward from the Caspian regions of Asia, crossing with the Baltic stock north of the Alps produced the Danubean race, and crossing with the Mediterranean stock south of the Alps produced the Alpine race.

This classification of the different racial types found on the continent of Europe is made on the basis of geographic distribution because we have good reason to believe that the great variety of characteristics presented by the physical environment of Europe has been a considerable factor in racial differentiation.

Anthropologists have advanced several theories as to the precise area in which the White race was differentiated. De Quatrefages has defended the view that the White race originated in the far north, probably in Siberia, and from thence spread southward. Professor Brinton and Professor Keane have both defended the theory that the White race was differentiated in northern

[14] *Ibid.*, p. 146.

Africa and spread over Europe. It is held that the blond race originated in the high altitudes of the Atlas Mountains, because in the early historical period a very definite type of blond to red-haired stock lived in Syria and Palestine. These two authorities believe that there was a relationship between temperature and color shadings. This theory would be plausible except for the fact that in regions of heat one finds sporadic varieties of the blond type; moreover, in the north we find a dark brunette type habitually living in Arctic regions.

Dr. Charles E. Woodruff advances another view as to the origin of the White race and maintains that his theory is consistent with all known facts. He finds a definite correlation between the color shading of man and the distribution of light. If we distinguish in the sun's rays the heat ray, the light ray and the actinic ray we find that while the heat ray and the actinic ray do not seem to be plainly connected with coloration, the light ray is a very potent influence in coloration of vegetable and animal life.[15]

Thus the distribution of the light rays of the sun is consistent with the facts of the distribution of the blond types. The blond type has never lived in the extreme north where the light is intense by reflection, nor in the equatorial region where the light rays of the sun are direct and burning, but has lived continuously in northern Europe where great forests existed,—a region having comparatively little sunshine even to-day, but which was persistently overcast and misty in the early historical period. Dr. Woodruff believes, therefore, that we must reject the North African hypothesis and accept the theory that the blond type originated in northern Europe and

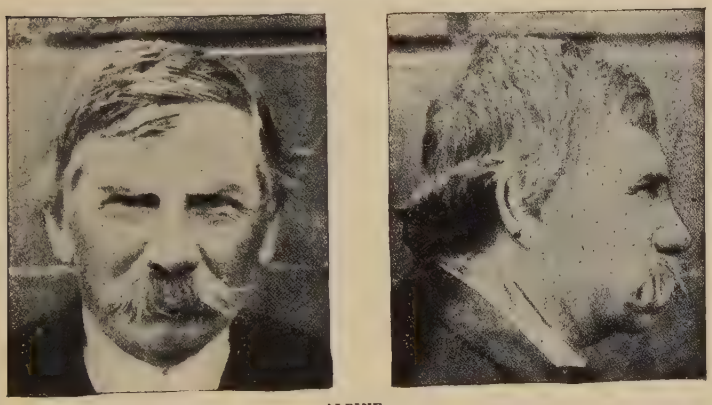
[15] *The Effects of Tropical Light on White Men.*

northern Asia, in a cloudy region heavily wooded. Without committing himself to Dr. Woodruff's theory of the influence of light, Professor Giddings thinks that a preponderance of evidence indicates a Baltic-Sibiric origin of the blond stocks of the White race.

The early paleolithic men of the Neanderthal type were distributed over Europe, northern Africa and western Asia. Wandering far north, not to the Arctic north, but into the cool, gloomy, cloudy north of the Baltic regions, northern Russia and Siberia, these prehistoric men became quite white in the course of time. Probably at first they were not distinctly blond, but nondescript in color, intermediate, "dirty looking." Living in this cloudy northern region for thousands of years they became eventually quite blond. Under the conditions of a cool, damp climate with little sunlight and considerable gloom, whiteness of skin may have had a definite adaptive value, just as darkness of skin, because it affords protection from the light rays of the sun, is the prevailing characteristic of races living along the equatorial zone. Hence, all individuals who possessed variations in the pigment cells in the direction of greater blondness, were more liable to survive and to transmit to their children this tendency to blondness. All others not so favored would live under a disadvantage and, in time, become exterminated.

Assuming that this relatively white variety of man was distributed over the Baltic-Sibiric regions, the Glacial epochs must have caused a crisis in the history of these blond peoples. As the ice crept down from the North, the White race, deployed along the ice front, was driven southward. If an eastward wing should follow the line of least resistance and find its way into the Japanese

BALTIC (TEUTONIC)



ALPINE

From Ripley, "The Races of Europe."

MEDITERRANEAN

FIGURE 71. The Three European Racial Types; Baltic (Teutonic), Alpine and Mediterranean.

Archipelago, we would expect to find a little group of the White race on this island to-day. We do find such a white strain.[16] If an east central contingent, moving south-

FIGURE 72. Area of Differentiation of the White Race in the Baltic. (According to Giddings.)

eastward before the on-coming ice sheet, worked its way into southern Siberia we should expect to find throughout this area in later ages groups of white men blended with the Mongolic stocks of eastern Asia. We do find such groups to-day. If a west central wing moved south, it would become broad-headed by intermarrying with the east central contingent which had already become broad-headed by intermarriage with the Mongolic stocks of Central Asia, and we would expect to find to-day in

[16] The Ainus of the Island of Yezo, Japanese Archipelago.

the western Caspian region, the area of the Black Sea and the Danube valley and in the Alpine regions a fair broad-headed type; we do find such a type to-day in this region, the type which we have called the Danubean and the Alpine races. Finally, if we assume that a western wing of this northern people, moving south before the ice front, returned northwestward when the ice receded we should expect to find, as we do in modern times, a definite Baltic area of dolichocephalic blonds.[17]

As the Glacial epochs lasted for thousands of years, the ice must have kept these blond groups separated from one another in an eastern, an east central, a west central and a western area, respectively. In the regions of the Caspian we find neolithic remains, then throughout Assyria, Palestine, Egypt, northern Africa, Spain, France and even southern England we find remnants of neolithic stone structures showing how persistently these areas were inhabited during the Neolithic period.

Then, as the great continental ice sheet melted back and the interglacial period began, men pressed northward to the regions of the Baltic. This Cro-Magnon, long-headed, Eur-African man, migrated to the northern sections of Europe and intermarried with the blond Baltic types. The Baltic peoples, prolific, sent out waves of migration. The Caspian peoples, also rapidly multiplying, sent out waves of migration. The Baltic peoples moving south and southeastward, the Caspian peoples moving south and southwestward, mingled and produced in the course of this process all the varieties of the White race. Professor Giddings maintains that substantially this explanation of the origin of the varieties of the White race is consistent with the known facts.

[17] See figure 72.

The problem of the origin of the aboriginal American peoples is as difficult to solve as any racial problem. Professor Keane believes that the early inhabitants of America came by two distinct routes: from Asia, by way of Bering Strait; and in late Tertiary times, from western Europe to Greenland and Labrador.[18]

Aleš Hrdlickă has carefully examined the remains of so-called prehistoric man in both North and South America, and concludes that the evidence does not support the doctrine of paleolithic man in America. He considers that there is yet no undisputed geological evidence of antiquity and that the somatological evidence bears witness to the close affinity of the North American remains to those of the modern Indian.[19] The South American evidence is defective because of imperfect geological determinations and in the failure of those who were not expert anthropologists to allow for the possibility of accidental or artificial introduction into older terranes.[19a]

The civilization of the races of Europe has spread with wonderful rapidity until it has set the standards of living in the remotest islands of the Pacific, as it has determined the culture of great commercial empires. Civilized man has succeeded in subduing many of the forces of nature and in converting natural energy into forms serviceable to himself. He has grown to believe that all peoples who have not gained a similar control of natural forces are to be pitied, that they represent a lower order of intellect and that their culture is a lower order of achievement. This assumption that the European White race is superior to all other races is based upon the remarkable achievements of the White race.[20] We conclude that, since the civilization is higher, it took a higher grade of mind

[18] Keane, *op. cit.*, pp. 362-364.

[19] *Bureau of Amer. Ethnology*, Bul. 33, p. 98.

[19-a] *Ibid.*, Bul. 53, p. 385.

[20] Boas, *op. cit.*, p. 2.

to develop it. It is argued that the European has a higher aptitude for achievement than a member of another race, and that this higher aptitude is due to his

FIGURE 73. The Family Tree of the Hominidae. (According to Giddings.)

mental and physical superiority. Professor Boas does not believe that achievement is necessarily a measure of aptitude for progress or of intellectual superiority.

We must remember that none of the great civilizations of the world was the product of the genius of a single people.[21] In ancient times, civilization was shifting over a rather limited area and was transferred from conqueror to conquered, or vice versa. Ideas and inventions were carried from one to another and each people participated in this early development and contributed its share to the general progress. In this process of borrowing and development, the fact that the European race happened to distance all others is merely a matter of a few thousand years, and in the vast history of man this is a short period. We must remember that the highly specialized Magdalenian culture is not less than twenty thousand years old, and yet there is no reason to believe that this stage was reached by mankind the world over at the same period.[22] Now that we know that we are dealing with vast periods of time it seems probable that the life-history of a people, the vicissitudes of its history, are fully sufficient to explain a delay of this character without obliging us to assume a difference in their aptitude for social development.[23] "This retardation would be significant only if it could be shown that it occurs independently over and over again in the same race, while in other races greater rapidity of development was found repeatedly in independent cases."[24]

At the present time, practically all members of the White race participate to a greater or less degree in the advance of civilization. In no other race has the civilization that has been attained at one time or another, reached all the tribes or peoples of that race. This does

[21] *Ibid.*, pp. 6-7.
[22] *Ibid.*, p. 9.
[23] Waitz, T.—*Anthropologie der Naturvölker*, 2nd. ed., vol. 1, p. 381.
[24] Boas, *op. cit.*, p. 10.

not mean that all members of the White race had the power of originating or developing the essential elements of civilization with equal rapidity. But the White race does show a remarkable power of assimilation, which does not seem to have manifested itself to an equal degree in any other race.[25] The problem is, therefore, one of explaining why the tribes of ancient Europe readily assimilated the civilization that was offered to them by Rome and Greece, while at the present time we find primitive peoples dwindling away before the approach of modern civilization.

In the first place these barbarous peoples were in their appearance, like the civilized men of their times. The stigma of inferiority, because they had not developed a civilization like the ancient civilization, did not attach to these peoples. The colonies of ancient times grew by accretion from among the more primitive people. Then, in ancient times, the devastating influences of diseases which nowadays begin to ravage the inhabitants of territories newly opened to the whites, were not so marked. These peoples lived in more permanent contiguity, and, being always in contact with one another, were subject to the same influences; consequently no isolated portion of the race had opportunity to become immune to certain diseases through natural selection. In modern times, the settling of an area near the habitation of some primitive folk is followed by epidemics among them contracted from the whites which sweep away large numbers, disturbing or completely destroying the whole social or economic structure of the people.

But the most potent fact which accounts for the apparently greater powers of assimilation possessed by

[25] *Ibid.*

the ancestors of the European peoples, is found in the differences of culture which are economic. The contrast between the culture represented by the modern white man and that of the primitive man is far more fundamental than the contrast between the ancients and the people with whom they came in contact. This is particularly in economic and industrial activities. The industries of primitive peoples of our times are exterminated by the cheapness and enormous quantity of the products imported by the white trader. The slow and laborious industrial processes of primitive peoples cannot compete with the power of production of the machines of the whites. Moreover, primitive tribes are swamped by the numbers of the immigrating race, which crowd them out of their old haunts so rapidly that there is no time for gradual assimilation. In olden times there was no such immense inequality in numbers as we observe in many regions to-day.[26] "We conclude, therefore, that the conditions for assimilation in ancient Europe were much more favorable than in those countries where in our times primitive people come in contact with civilization. Therefore, we do not need to assume that the ancient Europeans were more gifted than other races which have not become exposed to the influences of civilization until recent times."[27]

SUPPLEMENTARY READINGS.

Boas, F.—*The Mind of Primitive Man.*

Deniker, J.—*The Races of Man.*

Giddings, F. H.—*Principles of Sociology,* part iii, chapter ii (the theory of the present chapter will not be found in this

[26] *Ibid.,* p. 13.

[27] *Ibid.;* also Gerland, Georg—*Das Aussterben der Naturvölker;* Ratzel, F.—*Anthropogeographie,* vol. ii, pp. 330 *et seq.*

reference as it has been advanced since "The Principles" was published, and is taken with Professor Giddings' permission from notes of his lectures at Columbia University.

KEANE, A. H.—*Ethnology.*
RIPLEY, W. Z.—*The Races of Europe.*
SERGI, G.—*The Mediterranean Race.*
TYLOR, E. B.—*Anthropology.*

VIII

TRIBAL SOCIETY

There are three means of determining approximately the characteristics of social life among prehistoric men: first, a considerable mass of archeological remains; second, the existence of survivals in the traditions of civilized society indicating a time when the ancestors of these peoples lived under very primitive conditions; and third, a general parallelism between some features of prehistoric cultures and some features of the culture of primitive societies which exist to-day among the Australian aborigines, the American Indians, and other savage peoples.

But this parallelism has certain important limitations which must be remembered in any comparison we may wish to make. Modern savage groups live in relatively barren, inhospitable, inaccessible regions of the earth, into which they have been crowded by stronger peoples.[1] Moreover, the spread of the European race with its highly developed civilization has cut short the growth of the existing independent germs of civilization among these primitive peoples without regard to their mental aptitude.[2] Thus the parallelism is not exact, for while we cannot premise any marked intellectual superiority of prehistoric man over existing savages in explaining present cultural differences, we must recognize that advantage of some sort was possessed by the prehistoric

[1] Giddings, *Principles of Sociology*, p. 250. [2] Boas, *op. cit.*, p. 17.

ancestors of civilized races over the early ancestors of existing savage peoples.

The archeological remains of prehistoric man reveal to us much of his culture and practices. We have mentioned briefly in the third chapter the various types of implements which prehistoric men manufactured. They were made of rough chipped flint, and later of polished stone, and finally of rude metal. The arts of pottery and weaving were practised. When we examine the flint and stone implements of primitive men living in the savage state to-day, we find that their implements resemble these old remains which come down to us from prehistoric times. Comparison of prehistoric pottery and weaving with the pottery and weaving carried on by existing savages reveals a similar identity.[3] Thus we have evidence which leads us to believe that as regards the arts of manufacturing flint and stone implements, and even in the more pacific arts of pottery and weaving, existing savage societies are passing through the same cultural stage of development that the ancestors of European peoples passed through in prehistoric times. This identity in important phases of culture leads us to believe that in other respects the culture and social organization of prehistoric men were similar to the culture and social organization of modern savage societies. Consequently, if we would understand the social organization of prehistoric peoples, we must study the social organization and culture of modern primitive groups.

The most characteristic fact of primitive social organization among all groups of savage peoples—Eskimo, Australians, American Indians and others—is that the bond of union is always and everywhere one of ficti-

[3] See figures 74 and 75 and compare with figure 43.

Plate 74. Pottery made by the Pima Indians of Southern Arizona.

tious and magical or of real blood relationship. The members of a group are members of that group and not of another because they are related by "mana,"[4] or as kin to others in the group. This group of kindred tracing relationship and descent through mothers or through fathers is found in ethnic society, both savage and bar-

From The Reports of the Bureau of American Ethnology.

FIGURE 75. Baskets made by the Pima Indians of Southern Arizona.

barian, and is generally known as the "clan." "Any group of kindred which includes all descendants of a first mother through her daughters, granddaughters, and so on, and excludes all descendants through her sons, grandsons, and so on, is a metronymic clan. In like manner, any group of kindred which includes all descendants of a first father through his sons, grandsons, and so on, and

[4] "Mana" is that mysterious strength, virtue, grace, creating, saving, or healing power which the primitive mind associates with many objects, and which he believes to be communicable or contagious. It is the basis of much primitive religious belief, of magic, and of the North American Indian's "medicine."

excludes all descendants through his daughters, granddaughters, and so on, is a patronymic clan.''[5] Thus the clan is of two forms, the metronymic, in which descent is traced through the mother line only, and the patronymic, in which the descent is traced through the father line only.

In the literature of historic peoples there is evidence which indicates that the clan was a very widespread institution in ancient times. The clan existed among the Greeks. Homer tells us of the manner in which the Greek warriors were separated by tribes and by clans.[6] In the Old Testament of the Bible there are frequent passages revealing the existence of social organization on kinship lines. The metronymic clan existed in Shechem, for we read that Abimelech went unto ''his mother's brethren'' and because he was regarded as their brother obtained favor with them.[7] When Abram went down into Egypt he directed his wife Sarai, who was a beautiful woman, to say that she was his sister in order that the Egyptians in seeking to take her might not kill her husband. Afterwards he explained that while she was the daughter of his father, she was not the daughter of his mother. In accordance with the metronymic system of relationship he could marry her because only relation in the mother line counted.[8] The clan or gens existed among the Romans in the early historical period; those related to each other through males were known as *agnati,* those related to each other through females

[5] Giddings, *Descriptive and Historical Sociology,* p. 453.

[6] Homer, *The Iliad,* translated by Lang, Leaf and Myers, p. 32; and Morgan, L. H.—*Ancient Society,* p. 222.

[7] *Judges,* ch. ix, 1-3.

[8] *Genesis,* ch. xii, 10-20; ch. xx.

were known as *cognati*.[9] Among the Hindoos the clan is called the *Gôtra* and among the Arabs the *Hayy*. Among the ancient Irish the clan was variously called the *Tuath*, *Cinel*, or *Clann*.[10]

As only incomplete records come down to us of social life among these historic peoples in the period when they were organized in clans and tribes—on the pattern of ethnic organization in general—we shall find it more profitable to study primitive society as it exists to-day, and from this study, attempt to reconstruct a picture of what social relations were among the men of the prehistoric period.

Certain American Indian tribal groups, especially the tribes of the Iroquois confederacy and certain North Pacific Coast tribes, and the native tribes of Australia, are fairly typical of important characteristics in the life of primitive peoples. We will, therefore, study these primitive groups to gain a picture of social organization among uncivilized peoples.

The Iroquois tribes inhabited a region including the greater part of the present states of New York, Pennsylvania and Ohio, and portions of Canada north of Lake Ontario. It is thought that they originally came from beyond the Mississippi, making their way to the valley of the St. Lawrence and thence into central New York. The five tribes of the Iroquois people were the Mohawks, Oneidas, Onondagas, Cayugas, and Senecas. They resided in villages which were usually surrounded by stockades, and subsisted upon fish and game, and the products of a limited horticulture. In numbers they did

[9] Justinian, *Institutes*, Lib. I, xv. i, Cf. Gaius, i. 156; also Morgan, *op. cit.*, pp. 285-308.

[10] Ginnell, *The Brehon Laws*, pp. 102-109.

not at any time exceed 20,000 people. They lived in the great forests of New York. A long period elapsed after their settlement in New York before the confederacy was formed. During this time they made common cause against their enemies and experienced the advantages of coöperation both for aggression and defense. They were first discovered by white men in 1608 and about the year 1675 attained the culminating point of their power and influence.[11]

While this confederation of Indian tribes was ostensibly for purposes of mutual protection, there was a deeper basis for it in the bond of kin. The real tie was the existence of certain clans which the tribes had in common. All members of the same clan, whether Mohawks, Oneidas, Onondagas, Cayugas, or Senecas, were brothers and sisters to each other in virtue of their descent from the same common ancestor. Three clans, the Wolf, Bear, and Turtle, were common to the five tribes. Between the separated parts of each clan, although its members spoke different dialects of the same language, there existed a fraternal connection which linked the nations together with indissoluble bonds. In the estimation of an Iroquois Indian every member of his clan in whatever tribe, was as certainly a kinsman as his brother. This system of cross-relationship between persons of the same clan in different tribes is still preserved and recognized among the Iroquois in all its old force. Dissensions between component tribes in the confederacy were thus guarded against, for if the Mohawks fell upon the Oneidas, since the Bear clan was common to both tribes, there would be conflict between brother kinsmen, an unthinkable situation in the mind of primitive man.

[11] Morgan, *op. cit.*, ch. v, pt. ii.

Another important bond of union was the possession of a common stock language.

The tribes [12] occupied positions of entire equality in the confederacy, in rights, privileges, and obligations. Each tribe remained independent in all matters pertaining to local self-government. The confederacy created a general council of fifty sachems,[13] equal in rank and authority and invested with supreme powers over all matters pertaining to the confederacy. The sachems were elected by clans. The clans also had the right to remove a sachem from office for just cause. Each tribe had a council composed of its chiefs and sachems with supreme power over matters which pertained to the tribe exclusively. Unanimity in the council of the confederacy was essential to every public act, and in this council the sachems voted by tribes. The tribal councils alone had the power to convene the general council of the confederacy. The people had the right to participate directly in the discussion of public questions in the council by having orators represent them. The weak point in the confederacy was that there was no executive head, no chief magistrate. There were two equi-powerful war-chiefs with veto power over each other's acts. This provision, however, did not do away with the serious deficiency in administrative power. In this remarkable organization of a primitive people still in the cultural stage of stone implements and rudimentary agriculture, public opinion was very important. The distinctly democratic form of this system of social organization shows

[12] A tribe is a community of people occupying a definite territory, speaking one language or dialect, and having many customs and traditions in common; it is usually subdivided into several clans.

[13] Civil leaders as distinct from chiefs who were military leaders.

From the Reports of the Bureau of American Ethnology.

FIGURE 76. An Indian Tepee.

that the aptitude for democratic government is not in the exclusive possession of the Greek, the Roman, and the Anglo-Saxon peoples, but is quite likely to crop out wherever the circumstances are favorable.

The Iroquois called themselves "The People of the Long House" (*Ho-dé-no-sau-nee*). The Iroquois In-

dians lived in a community house which was long and narrow, with compartments for each family of the clan. The clan dominated the long house because it was primarily the clan house, and the clan was the most important body in local affairs. Since the clans were metronymic, the oldest woman in the long house was the matron who ran the house with supreme authority over all its inmates in domestic affairs. If a mere man offended, he was thrust out by the order of the house matron. All adults, men and women, had equal voice in the clan council, but in the tribal council women had no voice. Thus we see that among the Iroquois Indians the position of woman was on an equality with that of man. The rather widespread notion that among primitive peoples woman had a degraded position is not borne out by the study of many tribal groups. Among the Iroquois clans there was general recognition of the obligation not to marry within the clan. That is, men of the Bear clan must seek for wives, women of the Turtle clan or of some other clan, they must not marry women of their own clan, the Bear clan. This usage is connected with the idea that all persons bearing the same crest, or totem, or clan name, are related by blood and hence marriage between them is tabooed. A clan which follows the custom of requiring its members to marry individuals in another clan is called an exogamous clan. The usage is called exogamy.

One further unit of organization in the structure of Iroquois society must be mentioned. It is the phratry. The Iroquois tribes had a total of thirty-eight clans, and in four of these tribes the clans were combined into a total of eight phratries. The phratry was a brotherhood of clans, probably originally one clan, which, be-

coming overlarge, had subdivided.[14] Originally, marriage was not allowed between the members of the same phratry; but the members of either could marry into any clans of the other. Morgan regards this prohibition as an indication that the clans of each phratry were subdivisions of an original clan, and that, therefore, the prohibition against marrying into a person's own clan had followed to its subdivisions. The phratry was partly for social and partly for religious purposes. At the tribal council of chiefs and sachems members of each phratry usually seated themselves on opposite sides of an imaginary council-fire, and the speakers addressed the two opposite bodies as the representatives of the phratries. While blood feuds were ordinarily the concern of the two clans involved, it often happened that the clan of the murdered person called upon the other clans of their phratry to unite with them in avenging the deed. The phratry participated in funeral ceremonials and was also concerned in the election of the sachems and chiefs of several clans. In ball games the Senecas played by phratries, one against the other; and they bet against each other upon the result of the game.

As to the religious ideas of the Iroquois Indians, we know now that their conception of a "Great Spirit" has been misunderstood by those who first described them as believing in a single all-powerful deity identified with the Christian concept of one God. The Indian word "Manitou," which has been considered by many as an Indian name for God, does not mean the "Great Spirit" in the sense of an all-powerful ruling spirit; it is merely an adjectival concept containing the idea of the "big," the "powerful." Manitou means strange, wonderful; it does

[14] Morgan, *op. cit.*, ch. iii; Giddings, *op. cit.*, p. 461.

not mean a deity which is extraordinary in itself, but *things* which are strange, or mysterious, *are* Manitou. Thus the Indian has no idea of one Great and Ruling Spirit as we have, but he believes in a multitude of spirits animating all surrounding objects.[15]

One of the most interesting institutions of primitive people is "Totemism." Frazer defined a totem as, "a class of material objects which a savage regards with superstitious respect, believing that there exists between him and every member of the class an intimate and altogether special relation." [16] Because totemism is often closely connected with the social and religious institutions of primitive people it is one of the most illuminating subjects of study for the anthropologist. There are several features which various authorities have believed to be symptomatic of totemism. Dr. Goldenweiser has summarized them as follows:

(1.) An exogamous clan.

(2.) A clan name derived from the totem.

(3.) A religious attitude towards the totem; as a "friend," "brother," "protector," etc.

(4.) Taboos, or restrictions against killing, eating (sometimes touching and seeing), the totem.

(5.) A belief in descent from the totem.[17]

Since totemism among the Australian tribes and among the Indians of British Columbia presents certain characteristic features mentioned above, we will study these primitive groups and their relation to totemism. It is necessary to recognize that the totem is of three general kinds: the clan totem, common to all members of the

[15] Jones, W.—"The Algonkin Manitou," *Jour. Amer. Folk-Lore*, vol. xviii, pp. 183-190.

[16] Frazer, J. G.—*Totemism*, p. 1.

[17] Goldenweiser, A. A.—"Totemism, An Analytical Study," *Jour. Amer. Folk-Lore*, vol. xxiii, April-June, 1910, no. lxxxviii.

clan, and hereditary; the sex totem, one common to all males, another common to all females, of a tribe; and the individual totem, belonging to a single individual, and not hereditary. Moreover, totemism is to be distinguished from fetishism. A totem is a class of objects. If the eagle is the totem of a clan, all eagles are held in sacred veneration by all members of the clan. A fetish is an individual object, not a class of objects.[18]

We first noted that totemism is related to exogamy. In British Columbia the local clan or family is the important social unit among the Tlingit, Haida, Tsimshian, and Kwakiutl.[19] The Tlingit people comprise fourteen divisions each consisting of several towns. At the present time there are two strictly exogamous phratries, with descent through the mother. These phratries are subdivided into clans which generally derive their names from the locality they originally occupied,—"Of the Island of Teqo," "Of the House in the Middle of the Valley," etc.[20] Among the Haida we find two exogamous metronymic clans. The members of one clan are regarded as closely related, and marriage between persons of the same clan is viewed by them with almost the same abhorrence as incest is looked upon by us.[21] The Tsimshian clans are also exogamous and metronymic. The northern Kwakiutl are organized like the Tsimshian, with the exception of descent, which is both maternal and paternal. The system of descent among the southern Kwakiutl presents an interesting example of what is

[18] Frazer, *op. cit.*, pp. 2, 15, 52, 56.

[19] Boas, F.—*Internationaler Amerikanisten Kongress Stuttgart*, 1904, vol. xiv, pp. 141-148.

[20] Swanton, J. R.—*Social Conditions, Beliefs, and Linguistic Relationship of the Tlingit Indians, 26th. Report Bureau Amer. Ethnology*, pp. 396-399.

[21] *Ibid.*

probably a transition from male to female descent. Through marriage, a man acquires the position and privileges of his father-in-law which he cannot use for himself but transmits to his son. These are unmistakable indications of a former descent through the father.[22] But the clans are not exogamous. Indeed, a woman is advised to marry in her clan. The custom of marrying a member of the same clan and of never making matrimonial alliance with outsiders, is called endogamy. The two phratries of the Tlingit are Raven and Wolf. The exogamy of the British Columbian Indians does not seem to be indissolubly bound up with their system of totemism, so that we cannot always expect totemism to appear in connection with exogamy. Although many of the clans and family names of these peoples are animal names, the clans of the Tlingit and the families of the Haida bear names derived from localities. Thus the institution of totemism may exist without there being derivation of the clan name from the totem.

The British Columbian Indians do not generally believe that the clan descended from the totem animal. In the most common type of tradition found among the Tlingit, Haida, and Tsimshian, the ancestors of the clan or family were believed to have come into relations with some animal in the early historical period and to have derived from this animal the clan name. One of these traditions is somewhat as follows: some people captured a small beaver and kept it as a pet because it was cunning and very clean. It was well cared for, but by and by it took offense at something and began to compose songs. Afterward one of the beaver's masters went

22 Boas, F.—*The Social Organization and Secret Societies of the Kwakiutl Indians, Report of the U. S. Nat'l Museum,* 1895, pp. 334-5, 431.

through the woods to a certain salmon creek, and found two salmon-spear handles, beautifully carved, standing at the foot of a big tree. When he carried them home, the beaver said that they were his make. Then the people said something that offended it again, whereupon the beaver began, to every one's surprise, to sing just like a human being. While singing, it seized a spear and threw it straight through its master's chest, killing him instantly. Then it threw its tail down upon the ground and the earth upon which the house stood dropped in. They found afterwards that the beaver had been digging out the earth under the camp to make a great hollow. The people who had this experience, claim the Beaver as their crest and are proud to possess the songs composed by him.[23] In other traditions of the same sort there is no indication that the clan is thought of as having descended from the totem animal. The grizzly bear crest was obtained by a man who married a she-bear.[24] In some cases it was believed that the crest animal came to earth and became a man, the ancestor of the clan.[25] In the case of the Thunder-Bird, it is related that Too-Large, the Thunder-Bird, flew with his wife through the door of the upper world down to the lower world of men where there was a man at work upon his house. This man called to them that they should become men and help him. Too-Large at once lifted the jaw of his thunder-bird mask, and said, "O brother! we are people." In these legends the ancestor is first an animal, but becomes a man by taking off his animal mask.[26] Thus the concept

[23] Swanton, J. R.—*Tlingit Myths and Texts, Bureau of Amer. Ethnol.*, bul. 39, 1909, p. 227.

[24] *Ibid.*, pp. 228-229.

[25] Boas, *op. cit.*, p. 382.

[26] Boas and Hunt, *Kwakiutl Texts, Jesup Expedition,* vol. iii, 1905.

From the Reports of the Bureau of American Ethnology.

FIGURE 77. Indian Masks from the Pacific Coast.

of descent from the totem as an integral part of the totemic system is absent in British Columbia.[27]

The taboo is not associated with totemism among the British Columbian tribes.[28] After the birth of a child the woman must not eat any fresh meat for a period of from six months to one year. The husband must not eat or touch the flesh of any animal for at least a day after it has been killed. Twins are considered transformed salmon; and as the children of salmon they are guarded against going near the water for fear that they will be retransformed into salmon. Their mother's marks are regarded as the scars of wounds which they received when they were struck by a harpoon while still having the shape of a salmon.[29] The Kwakiutl do not eat deer, because that would make them forgetful. Thus we see that the relation of the people to their crest is one of historical association, rather than one of descent; and taboo is not here an important feature of totemism.

The ceremonial life of the British Columbian Indians is quite elaborate. When an Indian kills an animal the element of propitiation is usually strongly emphasized. Having killed a bear, the Lillooet hunter sings a mourning song as follows: "You died first, greatest of animals. We respect you and will treat you accordingly. No woman shall eat your flesh; no dogs shall insult you. May the lesser animals follow you, and die by our traps, snares, and arrows! May we now kill much game, and may the goods of those we gamble with follow us and come into our possession! May the goods of those we play lehal with become completely ours, even as an ani-

[27] Goldenweiser, *op. cit.*, p. 18.

[28] *Ibid.*, p. 22.

[29] Boas, *British Assoc. Adv. of Sci.*, vol. 59, 5th. Rept., p. 51.

mal slain by us!"[30] When the berries are ripe the chief summons all the people and announces that the time for picking has arrived. Before the people, who have painted themselves in honor of the magical ceremony, the chief holds a birch-bark tray containing some of the ripe berries and points the tray towards the highest mountain in sight, announcing to this mountain that the people are going to eat fruit. After this each of the group is given a berry to eat, and all then proceed to pick berries.

The system of guardian spirits and secret societies which has developed among the southern Kwakiutl is unique among primitive peoples. Each clan derives its origin from a mythical ancestor, on whose adventures the crests and privileges of the clan depend. This ancestor in the course of his adventures, meets a certain animal, and in a variety of ways obtains from him supernatural powers or magical objects: such as, "the magic harpoon," which insures success in sea-otter hunting; "the water of life," which resuscitates the dead, and other objects of a similar magical power. He obtains besides these things, a dance, a song, and cries which are peculiar to each spirit, as well as the right to use certain peculiar carvings. The dance is always a dramatic presentation of the myth in which the ancestor acquired the gifts of the spirit. These spirits are animals—the bear, wolf, sea-lion, killer-whales—which have become the protectors of men.[31]

Guardian spirits are acquired individually by young men. They are spirits which protect the young man and give him powers of invulnerability. One such spirit is "Making-War-All-Over-the-Earth," under whose protec-

[30] Teit, *Jesup Exped.*, vol. ii, p. 279. [31] Boas, *Kwakiutl*, pp. 333-396.

tion the youth may obtain three powers. Another spirit who grants to his wards nine powers is, "The-First-One-to-Eat-Man-at-the-Mouth-of-the-River." These spirits are hereditary and their number is limited to various clans in different tribes. As they appear only in winter, the ceremonials connected with them are held in the winter. During the rest of the year the Indians are organized, in common with other Pacific Coast tribes, in a system of three classes—nobility, common people, and slaves. As the slaves are rated on a par with personal property, the social structure really consists of the nobles and common people. These two classes comprise the clans and families. The ancestor of each family has a tradition of his own, apart from the clan tradition, and possesses certain crests and privileges. In each family the single man who impersonates the ancestor and enjoys his rank and privileges, is one of the nobility. Nobles range in importance according to the rank of their ancestors. During the period of the winter ceremonial this social order is thoroughly rearranged. Individuals are no longer grouped according to clans and families, but according to the spirits that have initiated them. At this time the people are divided into two main groups—the initiated, called "seals," and the uninitiated, called "sparrows." Throughout the ceremonies these two groups are hostile to one another, and the "seals" attack and torment the "sparrows."[32]

Throughout these ceremonies there is continuous use of elaborately carved wooden masks. When an Indian has on one of these grotesque masks he is regarded by the people as impersonating the spirit who gave the mask. These masks are painted and carved to represent certain

[32] *Ibid.*, pp. 399-499.

animals.[33] The two dominant tendencies seem to be to represent the entire animal, or to single out some characteristic feature of the animal which serves as an unmistakable mark of identification. Although many of these carvings are most realistic, some have been so far conventionalized that identification is difficult. Besides

FIGURE 78. Totem Poles.

these carved masks there are the familiar totem poles which stand before the houses of the Indians.[34] These generally represent the history of the clan or famliy. "In the prolific development of art—realistic in part and in part highly conventionalized—we must see the . . . dynamic element of the totemism of British Columbia. Deeply saturated with totemic associations, that art has

[33] See figure 77.

[34] See figure 78.

flooded the entire material culture of the area, and has thus become the most conspicuous factor in the ceremonial as well as the daily life of the people. Nay, the art of British Columbia is more than merely an important factor of totemism, for it has become a self-perpetuating source of totemistic suggestion."[35]

The phratry, which we found so characteristic of the Iroquois organization, is a constant feature in the social organization of Australian tribes. There are usually two phratries which are exogamous. The Dieri tribe is divided into two exogamous phratries, Kararu and Matteri, each of which comprises a number of totemic clans. Among the Arábana these two exogamous phratries are known as the Kirarawa and Matthurie. In both these tribes the mother's phratry and totem are inherited. But the social system is not as simple as this among all of the Australian tribes. The Kamilaroi are divided into two exogamous phratries, but in addition, each phratry comprises two classes, while each class contains parts of all the clans of one phratry. In the Warramunga tribes conditions are even more complex.[36] Thus the social organization of these most primitive peoples is quite complicated. But the matrimonial classes, which constitute the complicating factor, do not usually bear animal or plant names; it is the clans which invariably derive their names from their animal, plant, or inanimate totems.

The Australian natives have various traditions of descent from the totem. The Arábana legends tell of small companies of half-human, half-animal individuals of un-

[35] Goldenweiser, *op. cit.*, p. 50.

[36] Howitt, A. W.—*The Native Tribes of Southeast Australia*, 1904, pp. 103-199.

known origin, who wandered about in the mythical period *(alcheringa)*. They were possessed of superhuman power, and became the ancestors of the totemic groups. A great carpet-snake individual gave rise to the carpet-snake group. In their wanderings over the country these strange individuals performed sacred ceremonies. At places where they stopped and went into the ground, a rock or water-pool arose to mark the spot. Here a number of spirit individuals came into being who became transformed into men and women,—the first totemites. In the Aranda alcheringa there were no human beings but only incomplete creatures of various shapes. "They had no distinct limbs or organs of sight, hearing, or smell, did not eat food, and presented the appearance of human beings all doubled up into a rounded mass, in which just the outline of the different parts of the body could be vaguely seen." [37] The Ungambikula ("Out-of-Nothing," "Self-Existing") took hold of these creatures, and by means of a complicated surgical operation shaped them into men and women.

In Australia, the taboo plays an important part in connection with the totemic system. A member of the Arábana must not eat the totem animal, but can kill it and hand it over to the members of other totem groups to be eaten by them.[38] A kangaroo man must not kill a kangaroo with any show of brutality. He is only permitted to hit it on the neck. Then he can eat its head, feet, and liver; the rest he must leave to his friends. The mosquito man may neither kill nor eat insects. The rain man must use water moderately, and when it rains must

[37] Spencer and Gillen.—*The Northern Tribes of Central Australia*, 1904, pp. 145-146, and *The Native Tribes of Central Australia*, 1899, p. 388.

[38] Spencer and Gillen, *The Northern Tribes*, etc., p. 149.

stand in the open with no protection over his head other than his shield.[39]

Magical ceremonies are an important part of the institution of totemism in Australia. Among the Aranda, the main part of the *intichiuma* ceremonies consists of a series of magical rites supposed to further the increase of the totem animal. The kangaroo totem *intichiuma* is quite spectacular. The ceremony is performed at a spot where in the *alcheringa* many kangaroo animals went into the ground. The rock ledge is decorated with red ocher and powdered gypsum in alternate vertical lines about a foot in width to represent the red fur and the white bones of the kangaroo.[40] Men of opposite phratries do this painting; the painting of the left side being done by the Panunga and the Bulthara men, and that of the right by the Purula and Kumara men. These men then sit by phratries on the sides they have respectively painted. "They open the veins in their arms, and allow the blood to spurtle out over the edge of the ceremonial stone on the top of which they are seated. While this is taking place, the men below sit still, watching the performers, and singing chants referring to the increase of the numbers of the kangaroos which the ceremony is supposed to insure."[41] The pouring out of the blood of kangaroo men upon the rocks drives out in all directions the spirits of the kangaroo animals and the number of kangaroo is increased.[42]

Sections of the territory frequented by the Aranda are dotted with totem centers. *Alcheringa* ancestors are

[39] Spencer and Gillen, *The Native Tribes*, etc., p. 166.

[40] *Ibid.*, p. 201.

[41] Strehlow, C.—*Die Aranda und Loritja-Stämme in Zentral-Australien*, vol. i, pt. II, 1908, p. 59.

[42] Spencer and Gillen, *op. cit.*, p. 206.

represented as carrying with them one or more sacred stones or *churinga,* each one of which was associated with the spirit part of some individual. At the spots where the ancestors originated and stayed, or at the camping-places where they stopped during their wanderings, local totem centers arose; for at such spots a number of the ancestors went into the ground with their *churinga.* Their bodies died, but a tree or a rock arose to mark the spot. But another spirit issues from the sacred tree or rock and watches over the ancestral spirit. Among the Kaitish it is believed that the ancestors leave behind them spirit children who emanate from their bodies during the performance of sacred ceremonies. These spirit children are reborn by entering the bodies of women who pass near the spots haunted by such spirits. Male children dwell in rocks, trees, or mistle-branches; female children, in rock crevices.[43]

The contrast of totemic systems in these different territories, Australia and British Columbia, reveals the fact that each people has its own characteristic institution. Indeed, any effort to show that totemism is invariably associated with the five features mentioned is doomed to failure. We are bound to recognize that primitive peoples have their own individuality, as persons and collectively. It is not possible to lump all savage peoples together and make dogmatic generalizations about them. Primitive men have their own distinctive marks of custom and culture, just as modern men have, and sociologically we can distinguish many different types of social structure just as physically we find different racial varieties.

The ceremonial activities of primitive peoples are a

[43] Goldenweiser, *op. cit.,* p. 31.

very important part of their life.[44] In Australia, the natives devote much time to the initiation of the young men into the rights and privileges of the tribe. These initiation ceremonies are regarded as such an important means of conserving the traditions of the people, that the whole tribe occupies itself for three months together with these elaborate functions. The education of the Australian boy includes three sets of ceremonies. When the boy has reached the age of twelve, the first ceremony of "throwing up in the air" is performed. Then his nose is bored for a nose-ring. Three or four years later, at puberty, far more formidable ceremonies are undertaken and a very painful operation is undergone. These rites last ten days, during which the boy must not speak except to answer questions. He is pledged to secrecy concerning all that he sees and hears. He is impressed with the importance of obeying the tribal precepts and learns reverence for the superiority of the old men. At the age of from twenty to twenty-five a still more impressive series of rites is conducted which often lasts for several months. In this period there are dances and the *churinga* or sacred emblems are exhibited. Ceremonies imitating various totem animals are performed with elaborate costumes. The young man is made to feel his importance and responsibility in this initiation into all the mysteries of the clan. The feeling of reverence for the old men which is inculcated and the sense of pride at the possession of all this mysterious knowledge, tends to develop a deeper sense of unity and tribal cohesion.[45]

The ceremonial life of primitive peoples is bound up with a belief in magic. This belief is supplemented in

[44] See figure 79.

[45] Spencer and Gillen, *op. cit.*, chs. vii-ix; and Chapin, *op. cit.*, pp. 36-40.

FIGURE 79. Ceremonial Life of Primitive Peoples, Andaman Islanders Dancing.

the minds of peoples that have made some advance beyond the lowest savagery by a belief in personal spirits or ghosts. The basis of magic is the "mana," already mentioned.

Frazer reduces the fundamental principles of magic to two: first, that like produces like, or that an effect resembles its cause; and second, that things which have once been in contact, but have ceased to be so, continue to act on each other as if the contact still persisted. The savage infers from the first of these principles that he can produce any desired effect by merely imitating it; from the second principle he concludes that he can influence at pleasure and at any distance, any person of whom, or any thing of which he possesses a particle. Magic of the first sort Frazer has called "imitative magic," and magic of the second kind he has called "sympathetic magic." But inasmuch as the efficacy of the imitative magic depends upon a certain physical influence or sympathy, both kinds of magic may be conveniently called sympathetic magic.

The most familiar application of imitative magic based upon the principle that like produces like, is the attempt to injure or destroy an enemy by mutilating or destroying an image of him, in the belief that, just as the image is hurt, so does the man suffer and die when the image perishes.[46] The Ojebway Indian desiring to work evil to his enemy, makes a little wooden image of him and runs a needle into its head or heart, or he shoots an arrow into it, for he believes that by so doing his foe will at the same instant be seized with a sharp pain in the corresponding part of his body. A Malay charm which enables one to injure another person is to take

[46] Frazer, J. G.—*The Golden Bough*, 2nd. ed., vol. i, pp. 9-74.

the parings of nails, hair, eyebrows, and spittle of the victim, enough to represent every part of his person, and then make them up into his likeness with wax from a deserted bee's comb. The figure must be scorched slowly over a lamp every night for seven nights, with the following words:

"It is not wax that I am scorching,
It is the liver, heart, and spleen of So-and-so that I scorch."

After the seventh time the figure must be burned, and the victim will die.[47]

On the principle that like produces like, the savage does many things in deliberate imitation of the results which he seeks to attain. The Indians of British Columbia live largely upon the fish of their seas and rivers. If the fish do not come in the expected season and the Indians are in need of food, a wizard will make an image of a swimming fish and place it in the water in the direction from which the fish usually appear. This ceremony when accompanied by a prayer that the fish may come, will cause them to arrive at once. Some of the tribes of Central Australia subsist upon a certain grub, called the witchetty grub. They hold a ceremony which consists of a pantomime representing the fully-developed insect in the act of emerging from the chrysalis. "A long narrow structure of branches is set up to imitate the chrysalis case of the grub. In this structure a number of men, who have the grub for their totem, sit and sing of the creature in its various stages." After this they shuffle out of it in a squatting posture, and as they do so, they sing of the insect emerging from the chrysalis.

[47] *Ibid.*

This rite is supposed to increase the number of the grubs and give the people a larger food supply.[48]

The Indian medicine-men perform certain magical practices which are supposed to effect the well-being of their friends or enemies. Their supernatural powers are also invoked to cure disease and sickness. But the savage's notion of disease, of the cause of illness, is essentially different from the modern man's understanding of it. To the savage, a disease or sickness is always evidence that the victim is possessed by an evil spirit or that he has been bewitched by evil magic. If a wound bleeds excessively, it may be thought that some malignant spirit is sucking the blood of the injured person. Chants, accompanied by the beating of drums, are undertaken with the idea that by these means the evil spirit may be frightened away and the bleeding stopped. Sometimes a savage dreams that one of the medicine-men has got some of his hair, or a piece of his food or clothing, or indeed anything that he has used. Should he dream this several times he feels sure that it is so, and he calls his friends together and tells them that he has been dreaming about a man who must have something belonging to him. His friends go and ask the man if he has anything belonging to the other. The medicine-man usually denies it, but if he sees no other way out of it he makes the excuse that he has something that he is burning, but that it was given him to burn, and that he did not know to whom it belonged. In such a case he will give the thing to the friends of the sick man, telling them to put it in water to put the fire out; and when this has been done, the man will probably feel better. Sometimes a medicine-man may suck an evil spirit out of an affected part, thus effect-

[48] *Ibid.*

ing a cure. The Tongaranka medicine-man, when about to practise his art, sits down on the windward side of his patient, and his power is supposed to pass to the sick person "like smoke." The medicine-man then sucks the affected part, and withdraws his power out of him, and also at the same time the pain, usually in the form of a quartz crystal.[49] Magical ceremonies are performed with the object of treating the soul of the crop in order that the yield may be abundant. Harvest ceremonials are survivals of the primitive practice of treating the soul of the crop.

The primitive man's belief in "mana" magic and in spirits is directly related to his religion. There is no support for the statement that there exist tribes which have no religion. Such statements are based upon the idea that organized systems of theology alone constitute religion. Hence, any recognition of the universality of religion depends somewhat upon the definition of religion which we have in mind when we affirm or deny that a certain tribe has a religion. The definition of religion most generally accepted among anthropologists was advanced by Professor E. B. Tylor in his work, "Primitive Culture," as "the belief in spiritual beings."[50] Under the name of Animism, Tylor investigated the various forms of this belief in spiritual beings. Animism divides into two great dogmas, forming parts of one consistent doctrine: first, concerning souls of individual creatures, capable of continued existence after death or destruction of the body; second, concerning other spirits, upward to the rank of powerful deities.

There were two problems which deeply impressed the

[49] Howitt, *op. cit.*, pp. 355-396.

[50] Tylor, E. B.—*Primitive Culture*, 1891, vol. i, pp. 417-431.

thinking savage. What is it that makes the difference between a living body and a dead one; what causes waking, sleep, trance, disease, death? What are those human shapes which appear in dreams and visions?

"But in the very process of reflecting upon its own ideas the mind of man was beginning to look in upon itself and to apprehend phenomena of which the animal mind has never been conscious. It was beginning to have ideas of ideas; ideas of volition, life, and cause; ideas of the sources of those manifestations of power that had awakened wonder and fear. It was beginning to perceive an intangible world."

"Now for the first time man analyzed himself. Ordinarily thought and body seemed to be inseparable. Ordinarily the bodies of other men seemed like his own; they acted like his own and responded so perfectly to his spoken or acted thought that in them also body and thought seemed to be a concrete whole. But he had seen them when they responded no more. It was as if something real, though impalpable and evasive, had departed with the breath. Were there then, after all, in every man two selves? It seemed almost as if there might be, and the longer primitive man thought about this question and talked about it with his comrades, the more probable to his mind did the affirmative answer become. His own experiences seemed to furnish the final proof. Had he not often in imaginative moods witnessed things not visible to the bodily eye? Had he not repeatedly in dreams wandered far in the forest, while his body lay motionless in sleep?"

"So in the individual and in the social mind was born at last the idea of the self, or personality, as a conscious life, soul, or spirit, dwelling in the body but distinct and

separable from it."[51] All these varied experiences have developed the concept of a soul which lives after the death of the body, of a thin, unsubstantial human image, in its nature a sort of vapor, a film, a shadow, the cause of life and thought in the individual it animates, capable of leaving the body far behind to flash swiftly from place to place, invisible yet manifesting physical powers. The Indian believes that during sleep the human spirit wanders about and actually lives through the dream experiences which are remembered upon awakening. Hence some Indians never wake a sleeping man suddenly, because his soul might be wandering far distant and might not get back to the body in time. With the healthy waking life, the savage associates the phenomena of breath, shadow, and echo. Walking in the sunlight, he always saw a shadow that moved as he moved or was motionless when he stood still, but which never completely detached itself from him. To his mind this could be none other than a conscious self, belonging to the bodily self and usually merged in it, but capable of going away to live independently. Looking in the pool, the savage saw the shadow self more distinctly, and it behaved as before. In the mountains his voice reëchoed. Thus he came to believe that his double self could be far away and invisible, and yet speak, preserving all the identity of his proper tone.[52] Consequently we find that among primitive peoples the spirit and the shadow are synonymous terms. The Algonkins describe a man's soul as his shadow (*otahchuk*). "The Zulus not only use the word *tunzi* for shadow, spirit, ghost; but they consider that at death the shadow of a man will in some way depart from

[51] Giddings, *op. cit.*, pp. 246-247.
[52] *Ibid.*, p. 248.

the corpse, to become an ancestral spirit." The Caribs connect the pulses with spiritual beings.[53]

Since there was a spirit separable from the body, primitive man no longer thought of death as the end of conscious life. The spirit might leave the body, but it might return, or it might enter other bodies or objects dwelling in them and animating them. In coma the body might lie for days in a state indistinguishable from death. In epilepsy and insanity the individual is obviously not himself; hence the savage regards his body as animated by some foreign or evil spirit. To this day the ignorant believe that an insane person is "possessed," and there is current usage of the forms, "he is not in his right mind," and "he is out of his head."[54] Thus, it has become a rooted conviction among primitive peoples that ghosts or surviving spirits of the dead sometimes come back to their proper bodies, but oftener wander through the air, entering now into one person or object and now into another. The world is regarded as peopled with ghosts.

But primitive men attribute to all external objects, whether animate or inanimate, the possession either of "mana," or of an actuating spirit. The tree, the stone, quite as much as the human being or the swift forest animal, may have souls and are moved by feelings of love, envy, appetite, curiosity, and desire. Hence all Nature is animated by spirits. "Some of them are contemptible and man can abuse them or use them; but others are terrible, swift, subtle, or mysterious in their action and fill the wondering human soul with mingled admiration and dread. The serpent that could run without legs, the turtle that could breathe air or live in water,

[53] Tylor, *op. cit.*

[54] Giddings, *op. cit.*, p. 249.

the hawk that could see its prey from the sky, the plant that could heal or poison, the tornado, the lightning, and the sun—these were beings to be regarded with awe, and to be propitiated with the ceremonial respect accorded to all-powerful men."[55] Thus the savage does not believe in One Spirit, but he believes in many spirits of which some are good, others are bad spirits. The latter must be appeased with offerings and ritual, lest their cruel plans work out to the harm of men. Sometimes their evil designs may be overthrown by magic. And so the mind of primitive man seems to us, as Bagehot has so aptly put it, "tattooed over with monstrous images."[56] Life experiences are a confused mass of mysterious and inexplicable happenings; for the savage has failed to make that "rigid distinction between the subjective and the objective, between imagination and reality"[57] which the modern man is accustomed to make. Ideas and images are repeatedly confused with facts, a process which leads to blind gropings after wrong causes.

In primitive culture the different fields of human thought and effort, Law, Religion, Literature, Music, Art, Science and Magic, are not clearly differentiated and conceived of as more or less separate lines of endeavor; consequently many actions which we regard as quite commonplace and unconnected have for the savage definite religious significance or symbolic meaning. The traditional material in their culture has not been so carefully worked over and checked up as ours. The result is, that the same act will bring to the mind of the savage and the mind of the civilized man, radically different

[55] Giddings, *op. cit.*, p. 247.
[56] Bagehot, *Physics and Politics*, p. 120.
[57] Tylor, *op. cit.*

associations, and hence the explanations will differ markedly.

Primitive people have in general two theories of the human soul. The idea of transmigration of souls, and the idea of an independent life of the soul after the death of the body. The idea of transmigration is illustrated by the belief that the soul of the dead person is reincarnated in the body of the next born child. An Indian will sometimes bury a dead child under the spot where two paths cross, in the hope that the soul of the dead child, lingering near, may enter the body of some woman who passes that way and be born in the body of her next child. There is also the belief that animals are often entered by the souls of departed men. Hence there arise restrictions as to the killing of certain animals. The doctrine of the independent life of the soul after death takes two forms: the continuous notion, and the retributive notion. In accordance with the former it is believed that the soul of the human being continues after death the activities which it was accustomed to during its existence in the body. Hence there are buried with the dead warrior, his spears, arms, utensils, and personal belongings, and in some cases his favorite wife and his slaves are sacrificed on the funeral pile. The retributive notion is less widespread and of a later origin. According to this it is believed that the condition of the after life depends upon conduct and action during the worldly existence in the flesh. In addition to these beliefs we find among primitive peoples the system of worshiping ancestors. The spirits of the recent dead are believed to take particular interest in the affairs of the living. Ancestor-worship involves the question of the benevolent or malevolent influence of these spirits. Hence there have arisen elab-

orate rites and ceremonies connected with this system which aim at propitiating the souls of powerful ancestors in order that these spirits may be favorably inclined and advance the material prosperity of the living.[58]

The economic life of primitive peoples presents many striking contrasts to the systematized economic activities of civilized men. Savages live from day to day, from hand to mouth, satisfying their immediate pleasures and making little provision for future needs. Compared with the careful methods of the modern business man we would say that the untrained native lacked foresight. The savage does not seem able to sustain protracted labor. He does not appear to possess the power of continuous application which has made the prosperity of modern peoples. The routine and drudgery of agriculture is too great a burden for the Indian. Under it he often sickens and dies. The Indian is nervously more unstable than the average civilized man. He is more frequently subject to hysteria and becomes easily intoxicated. As the activities of primitive peoples are largely those of war, hunting, magical and religious ceremonies, there is little control of conduct by economic motives.

The scale of values of modern peoples is foreign to the savage. His sense of values is undeveloped by comparison with the finely sensitized value concept which we are accustomed to recognize. This difference is not primarily due to any mental defect inherent in the savage, but is almost entirely due to different traditional associations. Because we are familiar with a highly developed system under which we can procure what we want at store or market in exchange for money, we think that

[58] Giddings, *Descriptive and Hist. Soc.*, pp. 464-465; and Hozumi, *Ancestor-Worship and Japanese Law*, pp. 9-11, 12-14.

[illegible] [illegible] [illegible] [

at his departure still another present is handed to him. This custom of reciprocal gifts of hospitality permits rare products of a land or artistic creations of a tribe to circulate from people to people, and to cover great distances." Thus the early transfer of goods was through gift-making to strangers and others. But even before this there was the giving of presents with a view to propitiate. Evil spirits, powerful chiefs, and objects of reverence, might be appeased by gifts of useful articles. Hence the giving of presents was not in response to altruistic or unselfish motives but purely with a view to diverting or directing away from self some impending danger. "The transition from this form of propitiation to exchange for its own sake is easy, but the fiction of present-giving is long retained." [60]

In the course of time, production of articles of food and wear is no longer followed directly by consumption, but there is interposed the process of exchange for the sake of exchanging what is not wanted for what is desired. This exchange creates from tribe to tribe its own contrivances for facilitating matters. The most important of these are markets and money.[61] Markets are held among Negroes, East Indians, and Polynesians in open places, often in the midst of the primeval forests, on the tribal borders. The market is a neutral district between the bordering territories of the two tribes. It is a sacred place within which all hostilities must cease. Presents were first exchanged here, perhaps to keep up friendly relations; in time there was a growth of sentiment that members of tribes should be unmolested while

[60] Giddings, *Principles*, p. 280.

[61] Bücher, *op. cit.*; and Seligman, E. R. A.—*Principles of Economics*, 1908, pp. 67-80.

making exchanges in this district. Of course the object of this exchange is to procure articles which cannot be produced in one's own tribe at all, or at least in as large quantities. This leads each tribe to produce more than it requires of those products which are desired by other tribes, because in exchange for these it is easiest to obtain that which one does not possess one's self, but which others manufacture in surplus quantities. In this way the idea of value originated and developed in complexity until among modern nations we have many grades in our scale of values. In the course of time it always happens that some "one commodity has been exchanged so much more frequently than any other that men can always be sure that with it they can purchase any other commodity they desire." Whatever this specially well-known and highly-valued commodity may be—whether oxen or grain, beads or shells—it is a true medium of exchange, it is a true money.[62] But it is seldom that true money is found in primitive society; exchange is usually mere barter, the transfer of goods in kind. It has taken many centuries of constant transfer and exchange of goods before one particular commodity was recognized as a universal medium of exchange,—money.

Because the system of exchange and trade is in such a rudimentary stage of development among primitive peoples, modern concepts of price and competition are unknown. There is no competition in the economic sense, for that implies price and differing quality in goods. Price is a concept which is dependent upon a money economy, for price is the amount of money a given quantity of goods will exchange for. Without money there could obviously be no concept of price; and as we have seen,

[62] Giddings, *op. cit.*, p. 318.

money was unknown because primitive exchange is mere barter, the giving of goods for goods. There was no such system as hiring help for work because each community was self-supporting; consequently there could be no competition between wage earners producing a rate of wages. The industry which was carried on, fell to the lot of the women of the community, or to slaves, and no form of remuneration was paid for this work as such. Competition between different forms of capital reflected in the rate of interest could not exist, because the concept of capital was absent, there being little or no private property. The idea of property in land was but slightly developed since the land was held in common by the clan. Private property in objects was unimportant because of customs of lending, sharing, and giving presents. The growth of property by inheritance was checked by the custom of burying the treasures of the dead with them. The Indian's concept of property therefore differs radically from our concept of property. The Indian regards his name as his personal property just as much as we regard our house or our clothes as our private property. He can pawn his name if in debt, or loan it to a friend.

Perhaps one reason for the slow growth of economic concepts among primitive peoples was the existence of certain traditions which hampered the development of means of producing goods. New methods of production were less easily justified than in modern society. An improved method of producing an article encountered as obstacles to its general introduction many senseless superstitions and conservative prejudices. On the Nicobar Islands the art of pottery was given up because some of the natives who had just begun to make pottery

died.[63] We must remember that, "In barbarian and savage communities the collective regulation of life is not less but greater than it is in the civilized state. The bounds that may be overstepped are narrow and dread. Immemorial custom is inflexible, and half of all the possible joys of existence are forbidden and taboo. . . . By the conscious coöperation of elders in directing the rearing of children by young parents, by organized initiation ceremonies, by clan and tribal councils, each new generation is remorselessly trained in those beliefs, habits and loyalties which the group regards as vital to its existence."[64] Thus beneficial innovation in means of production is as likely as not to go contrary to some tribal usage, and hence be repressed because, being new and better, it might offend the spirit associated with the customary way.

Another hindrance to the development of production must be mentioned. It should be remembered that among primitive people agricultural and industrial activities are usually carried on by the women of the community.[65] The woman of the family was the food bringer, the weaver, the skin dresser, the potter, the beast of burden, and the "Jack-of-all-trades." The able-bodied men went on the chase, or went to war. Only the old and decrepit, the weaklings and the sickly men were left at home to stay with the women. These despised individuals fell into the productive activities of the women, weaving, dressing skins, pottery and other occupations requiring a sedentary mode of life. These occupations therefore, became associated with the weaker

[63] Ratzel, *Anthropogeography*, vol. ii, p. 699.

[64] Giddings, "Social Self-Control," *Pol. Sci. Quart.*, vol. xxiv. no. 4, 1909.

[65] Mason, O. T.—*Woman's Share in Primitive Culture*, 1894.

and despised members of society. It was only another step to regard as contemptible all productive occupations because only weaklings and women followed them. Consequently the proper thing for the strong adult man was the life of battle and hunting; routine and drudgery were to be left to all who had not sufficient strength to follow the more noble callings.

In the presence of these hindrances to improvements in the means of production, the development of an industrial society was of necessity slow and arduous. With taboos upon the doing of certain acts, with popular prejudice against industrial and agricultural occupations, the time when the community could habitually produce a surplus of goods over and above the actual needs of its members was necessarily far distant. The creation of more commodities than could be directly consumed was naturally dependent upon the existence of a fertile soil and a good water supply, but aside from this there must be a class in the community who labored constantly and persistently at the despised productive occupations. By the introduction of slavery on a somewhat large and systematic scale, this requisite was satisfied. Since warriors and hunters scorned industrial labor, slaves were forced to work in the fields and houses. The institution of slavery taught mankind the habit of steady labor and proved a good school-master for men who had avoided hard persistent work. The defeated were forced into it and learned to submit to it. Thus slavery was one part of the discipline by which the human race has learned to carry on industrial organization.[66]

[66] Seligman, *op. cit.*, p. 156.

SUPPLEMENTARY READINGS.

Boas, F.—*The Mind of Primitive Man.*
Boas, F.—*The Social Organization and Secret Societies of the Kwakiutl Indians.*
Bücher, Carl.—*Industrial Evolution.*
Reports,—*Bureau of American Ethnology.*
Frazer, J. G.—*The Golden Bough.*
Frazer, J. G.—*Totemism.*
Giddings, F. H.—*The Principles of Sociology.*
Giddings, F. H.—*Descriptive and Historical Sociology.*
Goldenweiser, A. A.—"Totemism," *Jour. Amer. Folk-Lore,* vol. xxiii.
Howitt, A. W.—*The Native Tribes of Southeast Australia.*
Jones, W.—"The Algonkin Manitou," *Jour. Amer. Folk-Lore,* vol. xviii.
McLennan, J. F.—*Studies in Ancient History.*
McLennan, J. F.—*The Patriarchal Theory.*
Mason, O. T.—*Woman's Share in Primitive Culture.*
Morgan, L. H.—*Ancient Society.*
Spencer, B., and Gillen, F. J.,—*The Native Tribes of Central Australia.*
Spencer, B., and Gillen, F. J.,—*The Northern Tribes of Central Australia.*
Thomas, W. I.—*Source Book for Social Origins.*
Tylor, E. B.—*Anthropology.*
Tylor, E. B.—*Primitive Culture,* 2 vols.

IX

THE TRANSITION FROM TRIBAL SOCIETY TO CIVIL SOCIETY

Mankind did not make the change from primitive society, organized on the basis of blood relationship, to civil society where the bond of union is mutual toleration and coöperative interest, in any sudden and complete manner. The transition period was a long and an important one. Many factors and numerous influences were at work undermining and breaking down the old structure of society. Although the beginnings of this change belong to a more or less remote prehistoric period, the later stages of the transition have been recorded in a most interesting manner in the early literature and laws of historic peoples. Ancient Greek literature, early Irish, Welsh, and Saxon laws, contain numerous references to a structure of society which was neither tribal nor yet properly civil, but presented rather the characteristics of a transition form. We must not consider that this change took place at the same time all over the world among those peoples which are now civilized, for there is indication that different races attained civilization at different periods. Nor must we expect to find that the transition was always made in accordance with the same process of change. Sometimes one factor was most important, at other times or among differently situated peoples some previously neglected influence became a dominant force. Thus the problem is one of exceeding complexity and all we can hope to do is to study

a few of the more important influences which have been at work in combining to produce civilization.

The germ of a civil state appears when several tribes unite and form a confederation for purposes of mutual protection. We saw that the Iroquois confederacy was, in many respects, like a true civil state. Yet this remarkable organization was really not advanced beyond the stage of ethnic society because it was composed of tribes of Indians who traced descent through the mother line. The change from metronymic to patronymic organization seems to have been essential in the early history of many peoples for the final great transition to civil society. This change appears to have occurred at any stage in social evolution. A patriarchal organization had been already attained by most historic peoples when their earliest known literature was written; in consequence, even down to the middle of the nineteenth century, traditions of earlier metronymic organization had passed from men's minds.[1] In passing from metronymic to patronymic organization, society was deeply influenced by the economic struggle for foods. In this period human savagery had full expression. There were ruthless wars of extermination and surplus population within the group was put to death. Social regulations placed a ban upon the marriage of young men, resulting in polyandry[2] and in polygymy[3] among the older and powerful chiefs.[4]

[1] Dealey, J. Q.—*The Family in its Sociological Aspects*, 1912, p. 27, see also Howard's *Matrimonial Institutions*, Morgan's *Ancient Society*, Fustel de Coulanges' *Ancient City*, Robertson Smith's *Kinship and Marriage of Early Arabia*, Louis Wallis' *Sociological Study of the Bible*, Keller's *Homeric Society*, Gummere's *Germanic Origins*, and Hearn's *Aryan Household*.

[2] A marriage system in which a woman has several husbands.

[3] A marriage system in which a man has several wives.

[4] Dealey, *op. cit.*, p. 23.

One of the important factors in the change seems to have been the practice of obtaining wives by capture. Under the system of mother descent, the husband came to live with his wife's kindred, and the children were claimed by the mother clan and took its name. In the new relations which grew out of the system of wife capture, the children of the captured wife quite naturally belonged to the kin of the father as long as he chose to keep them and their mother, and if he cared enough for them to hold them as his property until their maturity, they took his name. This transition is described by Tylor as taking place under his observation among the Malayan tribes of the Baber Archipelago.[5] Powell has described how force of circumstances consequent upon the conditions of life in the desert region has caused the Pueblo Indians, a matriarchal people with female descent, to place the control of family affairs temporarily in the hands of the husbands and fathers. As water is scarce for irrigation in their desert region, these Indians are obliged to separate widely for the cultivation of lands at a distance from the central pueblo. The consequence is that the control of the families and the training of children are temporarily taken out of the hands of the mother's kin.[6]

Economic changes of vast importance occurred at about the time this system of wife capture was originating. These changes operated to strengthen the motive to obtain possession of offspring.[7] In early stages men obtained their food by hunting wild animals. "Under cer-

[5] Tylor, E. B.—*Jour. of the Anthropological Institute,* vol. xviii, p. 261.
[6] Powell, J. W.—Letter quoted by Tylor, *ibid.*, p. 258.
[7] Giddings, *Descrip. and Hist. Sociology,* p. 464, *Principles,* p. 288, Dealey, *op. cit.,* p. 24.

tain circumstances where game had become scarce, it was discovered, at first by mere accident, that a less precarious food supply could be secured by preserving various animals and caring for their increase, rather than by devouring at once the entire produce of the chase. Domestication of animals was a discovery of momentous import, and with their multiplication first for food, then for transport, and finally for clothing, protection and pleasure, we have the conditions for the transition to the pastoral stage."[8] The chief result of the domestication of animals was assurance of a permanent food supply, and henceforth man, "in place of relying on natural production, gorging himself in one season, starving in another, was able to store his food supply into flocks and herds, thereby securing a constant and abundant source of flesh and milk."[9] Thus there was afforded an opportunity to accumulate wealth which stimulated the ambition of man to devote himself to activities other than those of war and the chase. "In the pastoral life was born the desire to multiply herds and herdsmen, and to transmit property to sons."[10] Male children of the wife by capture, proved an asset of considerable importance to the strong man who had plundered his foe's herds. Consequently there was an economic motive to reinforce the social usage of wife capture and retain possession of children.

"Under these new conditions courage and vigor were in demand, since the race had of necessity to be brave in the defense of its wealth and aggressive against robber bands and carnivorous beasts. The inert and the cowardly were killed, or as slaves received life in return for labor. In this way developed a breed of masterly

[8] Seligman, *op. cit.*, p. 71. [9] Dealey, *op. cit.* [10] Giddings, *op. cit.*

men who loved war with its turmoil and bloodshed and who ruled with an iron hand over slave and family alike. These dominating males, as warriors, priests, and judges, were the heads of powerful families and groups, owning slaves, flocks and herds, and wide areas of grazing-lands.'' [11] The industry developed under these new conditions, diverted attention from war, and marriage by purchase gradually succeeded marriage by capture. This new form of marriage gave the husband even greater authority over the wife than he secured by capture, since his right to the purchased wife cannot be denied by her kinsmen. She was wholly surrendered by her kinsmen and could cherish no hope of restoration to them.[12] The husband's authority was further increased by religion. Ordinarily the children would follow the totem of the mother, but if the totems of the two parents were hostile, confusion resulted. Hence there developed the system of adopting the captured or purchased wife into the clan and totem of the husband. In this way the children became in every sense the kindred of the father. McLennan has described a transition of this sort among the Guinea negroes. The chief's principal wife and her children must be of the clan and totem of her kinsmen by blood, but the husband often purchases a slave or a friendless girl and by consecrating her to his bossum, or god, he makes her of his kin and faith. The bossum wife and her children are under the husband's control, and it is the bossum wife who is sacrificed at the chief's death, that her spirit may follow his.[13] By means of these different usages the father's power was finally established over his small community.

[11] Dealey, *op. cit.*, pp. 24-25.

[12] Giddings, *op. cit.*

[13] McLennan, *The Patriarchal Theory*, pp. 235-236.

Population multiplied rapidly under these improved conditions, and the food supply became inadequate in certain densely peopled regions. Presumably by accident, it was found that the seeds would multiply themselves, and that the stick was more effective for grubbing than the hand; when these discoveries were made we have the beginning of the cultivation of the soil. But we must not think of this agricultural stage of food getting as *always* following upon the nomadic or pastoral stage, because the resources of many regions will never admit of agriculture and can only furnish a scant subsistence for an occasional wandering herd. Thus the transition was not an invariable one from pastoral to agricultural, but quite as likely there was the change from hunting to agriculture, since we often find among primitive peoples a degree of agriculture combined with the hunting or fishing stage. We cannot assert the exact chronological sequence of these stages because knowledge of all the details is lacking. Some of the most careful investigators now believe that the domestication of animals was not the achievement of the hunter at all, but of the primitive farmer, and that the pastoral stage was an outgrowth of early agriculture. At any rate, "it is reasonably sure that the primitive tilling of the soil was carried on by the hunters' wives and daughters as a subordinate and auxiliary means of support." Only at a much later period did agriculture acquire more importance. Not until the game supply had been practically exhausted and the roving life of the hunter made impracticable was chief reliance put upon agriculture.[14] If the food supply was bettered by the system of raising flocks and herds it was made doubly secure by crop raising. As grain and wheat

[14] Seligman, *op. cit.*

could be stored and kept for long periods of time the day of famine was less imminent than ever before, and men could dwell in a security seldom previously experienced.

The patriarchal organization of society was influenced by this momentous economic change and now the religious prerogatives of the family group took on added significance. If men were generous to their household gods in gifts and sacrifices, then there would be bountiful harvests for man and beast. Thus, while the family may regard natural objects and forces as animated by friendly or evil spirits as before, they entertained for the soul of the departed founder of the house the stronger feeling of veneration. They thought of the ancestral spirit as their friend and protector. To the ancestral spirit, therefore, they paid their principal devotions. It was believed that the soul had need of a dwelling-place and of food and drink, for the soul that had no tomb, wandered forever as a homeless spirit, and instead of being a protecting power, it usually became a malevolent ghost.[15] To secure the repose of the soul, its body must be reverently buried and a tomb prepared where food could be left and libations poured in accordance with proper ceremony. Often there was an altar within the house whereon there burned a sacred fire, extinguished only after the entire family had perished.[16]

Ancestor-worship reacted upon the domestic life "and marriage was arranged with reference to the transmission of property and of priestly office to sons, and to the preservation of the integrity and continuity of the family group." As none but a son could properly perform the rites of the ancestral tomb, the patriarch of the house

[15] Giddings, *Principles*, p. 291. [16] *Ibid.*

must make sure of legitimate male offspring." The consequence was that the position of woman was regarded as inferior. Having lost the power of personal choice in marriage "she was compelled to take whatever husband chance or fortune dictated." Her day of leadership in household management had passed and there remained only drudgery within a limited sphere. Marriage depended upon the whim of her husband, so that she no longer had any voice in its duration. Her duties were often so arduous that she became prematurely old. Then there was always the danger that her place might be taken by a younger and more attractive wife. In this way "the natural love marriage of earlier civilization" yielded to one of uncertainty and sensuality. But this polygamous marriage system existed only among the wealthy and powerful. Among the masses monogamy was the rule, since it became too expensive for the ordinary man to maintain more than one wife. Thus "the marriage basis had become largely economic." [17] Another and darker aspect of the fierce transition from metronymic conditions to the new organization, was the enslaving of marriageable women of the conquered to become the concubines of the conquerors.

With the establishment of male descent and ancestor-worship, clan headships and tribal chieftainships tended to become hereditary in certain families. A binding continuity of tribal tradition was formed which held together in compact union not only the members of the clan and of the family, but also the living with the dead. Thus there was social integration and the structure of society became more coherent and substantial. Yet a patronymic tribe in which chieftainship had become heredi-

[17] Dealey, *op. cit.*, pp. 29-30.

tary soon underwent changes of organization. These changes consisted in the gradual and almost imperceptible weakening of the bond of kinship and a strengthening of the bond of personal allegiance. A barbaric feudalism slowly developed, and, step by step, this new system of social organization was substituted for the old system of kin, and a new basis for the social structure began to gain recognition. The powerful and wealthy chief obtained the admiration of his followers, and in time needed retainers to care for his large possessions. But so long as wealth consisted only of implements and weapons, game, skins, small stores of grain, baskets, pottery, and beads, and so long as relationships were metronymic, the chieftain's wealth could never be large enough to become a source of formidable power. But when the tribe had become rich in cattle and masculine power had been firmly established through patronymic kinship and ancestor-worship, then conditions were different. Among the Kaffirs of South Africa this barbaric feudalism has been observed. The chief and his family are regarded as noble, since his wealth is the inherited cattle of his father, increased by other cattle obtained from numerous fines and confiscations levied upon his followers.[18] Among the privileges he obtains from his followers is the right to pasture his increasing herds on the outlying border of the tribal domain. To the simple tribesman his wealth seems stupendous. By dispensing favors and enriching favorites he is able to control the retinue, or court of adventurous men who come to him from all parts of the tribe, and convert them into formidable bands of retainers.[19]

[18] Maine, H. S.—*Early History of Institutions*, 1888, pp. 143-144.
[19] Giddings, *op. cit.*, p. 294.

The ancient laws of the Irish show us the successive steps by which feudal relations were created in patronymic tribal society. The Brehon laws disclose that at the earliest period the chief was above all things else, a man rich in cattle and sheep. One of the laws prescribes that the head of a tribe besides being experienced, noble, and learned, must possess wealth, and be "the most powerful to oppose, the most steadfast to sue for profits and to be sued for losses." [20] It is evident from these laws that the way to chieftainship was always open through the acquisition of wealth. The tribesman who had grown rich in cattle and was striving to become a chief, was called, a "bo-aire," or cow-nobleman.

The first step in the direction of securing large possessions in the coveted oxen, was to serve some already established chief. The young, the clever, and the brave, who came to do court service to this well-known leader, received as his companions, portions of his stock and shares in the booty of marauding expeditions. The chief also extended his right of pasturage in the outlying waste to his retainers, whose own herds rapidly increased in numbers.

In this struggle for wealth there were some unfortunate individuals who suffered loss and ruin. They were present in the broken and crushed men who were known in every Irish tribe as "fuidhuirs." At first this class of fuidhuirs was composed of outcasts from the clans, men who had disobeyed the clan rules and violated tribal custom. The number of fuidhuirs was increased by inter-tribal wars, in which tribes are broken up and scattered. Such ruined and outlawed men the bo-aire gathered about him on the tribal waste land as a band of rough adventur-

[20] Maine, *op. cit.*, p. 134.

ers, ready to follow him at any moment on marauding expeditions. In course of time these lawless bands were used by the bo-aire in committing depredations on weaker tribes and in stealing their cattle. "Deprived of all possessions, conquered tribes can then subsist only by borrowing stock back from the arrogant cow-noblemen, who thus become receivers of regular tributes and rents."[21]

Mr. Mallock calls the struggle which develops under the conditions of tribal feudalism, the struggle for domination to distinguish it from the struggle for mere existence described by Darwin. In this struggle, wealth had become an important social element and operated to differentiate the tribal population into classes. Yet the retainers of the chieftains, or the followers of these retainers, might themselves be men of any tribe, although society continued to be organized on the gentile principle. This is clear evidence that we are dealing with an intermediate stage which was neither pure tribal organization, nor yet true civil organization. The bond of union was allegiance; no question of relationship was asked; it was only necessary that they should be loyal adherents, faithful to their chosen leader and protector. "Here was a first step in that momentous change which was finally to break down tribal organization and substitute for it the civil organization of society on the basis of industrial and political association, irrespective of the limitations of blood relationship."[22]

Many historical peoples have passed through the stage of rude feudalism which the Brehon laws describe.[23] We

[21] Giddings, *op. cit.*, pp. 295-296.

[22] Giddings, *Descrip. and Hist. Soc.*, pp. 472-473.

[23] Hopkins, E. W.—"The Social and Military Position of the Ruling Caste in Ancient India," *Jour. Amer. Oriental Society*, vol. xiii, 1888.

find it described in the "Odyssey" as the social order of the Greeks in the Homeric period. Tacitus tells of the custom of giving cattle and grain to tribal chiefs which existed among the Germans and indicates the beginnings of barbaric feudalism among them.[24] We have seen how a metronymic people like the Iroquois Indians had combined their tribes into a confederation which remained a source of power and dread to all their enemies for two hundred years.[25] But patronymic tribes of the same racial stock, dwelling within a territory affording natural geographical unity and protection, have united in military confederations that are more formidable, and more stable than the strongest of metronymic confederations. "The Egyptians, the Chaldeans, the Hebrews, the Greeks, the Romans, the Saxons, the Franks, the Germans, and the Slavs were originally tribally organized peoples which, by growth of population, confederation, and consolidation, developed into civil states."

"When patronymic tribes confederate and form the ethnic nation, the agnatic principle and ancestor-worship, combined with political and military conditions, confer great authority upon the chief of the confederation. He becomes a military leader, a religious leader or priest, and a supreme judge, all in one. The chief, in a word, becomes a king." [26]

This patriarchal organization of society did not indefinitely remain the characteristic mark of the social structure, for changes occurred in all of the component family groups in response to certain new conditions which grew out of these relations of prosperity and unity. The family became increasingly definite, the clan gave place

[24] Tacitus, *Germania*, ch. xv.
[25] Morgan, *op. cit.*, pt. ii, ch. v. [26] Giddings, *op. cit.*, p. 473.

to new and specialized forms, and so in like manner, did the tribe. The old series of organizations making up the ethnic nation were supplanted by compact kindreds, hamlets and towns. "This patriarchal kindred wherever found, as among the Aryans of India, the Greeks, the Slavs, the Celts, and the Germans, normally consists of five generations of descendants of a common ancestor, dwelling together as a community, sometimes as a joint family, and owning an undivided estate. At the end of the fifth generation the estate is divided, and each of the male heirs may be the first ancestor of a new kindred that will hold together, as before, for five generations." [27] This system recommends itself to our common sense when we consider that five generations is all that the average man can ever know of his kindred. His personal acquaintance seldom extends beyond his grandfather, and rarely to his great-grandsons; thus any given individual, his father and grandfather, his son and grandsons, may constitute a five generation group.

The patriarchal kindred occupied a definite territory, but on their possessions were often found dwellers in some sense attached to the kindred, though not strictly members of it. These people were of different origins; sometimes they were remnants of a conquered people, often they were individuals from shattered kindreds elsewhere who, by some service, had won the hospitality or protection of the proprietary kindred. By adoption they were often taken into participation in some of its privileges. Although commonly organized in partial imitation of the patriarchal kindred, these individuals were always on a basis of strict equality among themselves. In return for the privileges of occupying the land, they

[27] *Ibid.*, p. 481.

may have paid rent in produce or rendered the proprietary group various services. "In this differentiation of the population occupying land held by a proprietary kindred we probably see the beginnings of that sharper division which at a later time is presented within the manorial community. The groups of non-kindred, inferiors, equal among themselves, were probably the beginnings of the class afterward known as villain tenants. And that democratic equality which many students of economic history a generation ago attributed to the 'village community' probably never existed except within these organizations of non-kinsmen."[28]

In these several ways, through tribal feudalism in which the bond of allegiance and faithfulness was substituted for that of simple blood relation, as well as through the custom of admitting to certain privileges of the five generation kindred a group of dependents who occupied the proprietary domain, the old structure of ethnic society was broken down and a new basis of relations was appearing. Now the supreme power which is vested in the patriarch of the group, faced new problems of organization forced upon it by the contact of a ruling and a subject population. The old usages were found ineffectual in dealing with the complex relations which had arisen. Unattached to the tribes with which they had cast their fortunes, but acquiring wealth and power, the miscellaneous elements living on the tribal domain demanded juristic and political rights.[29] Commercial rights were first granted with but little hesitation. But

[28] *Ibid.*, p. 482; and Seebohm, F.—*The Tribal System in Wales*, and *Tribal Custom in Anglo-Saxon Law;* Seebohm, H. E.—*The Structure of Greek Tribal Society;* and *The Venedotian Code, Ancient Laws and Institutes of Wales.*

[29] Giddings, *Principles,* pp. 314-331.

to permit the alien to marry into a local clan was to admit the wife to the worship of strange gods, and was ultimately to intrust to strangers the solemn sacrifices to the protecting ancestral spirits. This innovation was of such a serious nature, to the mind of primitive man, that it was deferred until the pressure forced general recognition of the heterogeneous population. New relations, however, were in course of time expressly authorized and sanctioned; thus the customary usages of the people were converted into positive law.[30]

"Each nation in its infancy has regarded itself as a peculiar people. It has cherished its law as a body of unique and unequaled wisdom. When, therefore, after it has subjugated alien peoples and has annexed their lands, and has discovered that their systems of law differ only in form and detail from its own, its conception of the nature of law necessarily undergoes a profound change. It finds itself obliged to think of law as made up more of general than of peculiar principles. It begins to think of certain principles as universally true, and to identify them with the nature of society. It observes, moreover, that the universal rules of customary law are independent of the forms of government, and it begins to regard them, therefore, as of superior authority, and to believe that governments should themselves be governed by the universally accepted rules of right." [31]

Back of these changes in the structure of society, and at the basis of most innovations in custom and usage, were certain wider economic conditions. One of the chief of these was the existence of natural resources in soil and surroundings which would permit of a somewhat easy

[30] *Ibid.;* and Tarde, *op. cit.*, pp. 310-322.
[31] Giddings, *op. cit.*, p. 329.

accumulation of wealth. As long as men lived from hand to mouth and consumed immediately all that was produced, no enduring basis for formidable power existed. But when men learned to store their food supply in flocks and herds and to depend upon cultivated plants for their subsistence, it was possible to lay aside an ever-increasing fund of supplies, a surplus which could be drawn upon in time of famine or other need. With the organization of patriarchal society, property became an established institution, and slavery became an important social system. The captive of war was employed as a cowherd or a shepherd. Since large flocks can be attended by relatively few herdsmen, slavery did not reach its most extensive form of development until opportunity was afforded for the use of large numbers. The pressure of population upon the food supply developed a system of cultivating the soil which, though arduous, was profitable, provided a good supply of labor could be had. The slave was forced into agricultural labor and cultivation of the soil was then carried on upon a large scale. By the employment of gangs of slaves it was possible to produce more wealth and thus increase the surplus. But if there was no opportunity to exchange the surplus products of one locality for desired articles from other regions, there was a definite limit to this surplus-producing cycle.

It was only with the growth of barter and the increasing possibility of exchanging surplus products that it became profitable to augment both one's land and one's slaves. A market for agricultural production must develop and trade routes open up before slavery can be highly lucrative.[32] But in addition to the existence of a market, one other condition was essential to the spread of

[32] Seligman, *op. cit.*, pp. 154-162.

slavery: a supply of free land. The reason for this is found in the nature of slave labor. The slave was usually unskilled at methods of cultivation, since as a warrior, before his capture and humiliation, he was accustomed to regard manual labor as degrading. Moreover, his labor was reluctant, hence he was not interested in making it efficient. And further than this, the slave was stupid and ignorant of right methods. Because of these traits of the slave, his work was wasteful and extravagant. Consequently, the only way to get increasing returns from agricultural work of this sort, was to set the slave at a new tract of virgin soil as soon as he had used up the vital qualities and destroyed the fertility of the land which he had been cultivating. It paid better to bring fresh land under the plow, than to put more effort into old land; it was more profitable to increase acreage than to redouble effort. And so, as long as there was a boundless expanse of good land available, slave labor, which implied superficial cultivation, was still economical, but as soon as the supply of land decreased through occupation or exhaustion of its resources, slavery waned in importance. Thus, although slavery was an institution of great importance in prehistoric and ancient times, with the virtual exhaustion of free land, slavery in modern society has gone, never to return.

One consequence of this creation of a surplus, whether by slave labor, or otherwise, has been that certain classes in the community have not found it necessary to devote their entire time to depressing and enervating labor. Some individuals were afforded leisure from the drudgery which dulls the finer sensibilities and reduces bodily vitality. With the attainment of leisure, came the possibility of an increased development of Art, Literature,

Science and Philosophy, of all higher arts of life and refinements of living which have enriched primitive cultures and converted them into civilizations.

We have indicated another factor as bound up with the creation of a surplus. This was the establishment of a market and trade routes. Probably no other single force in human history has been more important in bringing about the complete transition from tribal to civil society than the growth of commerce. If there was opportunity for commerce the creation of a surplus was favored, since the trading of an excess in the home produce for some new want stimulated the further production of surplus to more fully satisfy that want. In time, new industries originated, and these in turn, were worked for the surplus product which could be exchanged for still newer wants. The resulting diversification of wants was educational for the people and tended to lay the basis for a rich and self-sustaining economy which becomes the foundation of a great civilization. Corresponding to the exchange in wares and articles of commerce, there was a communication of new ideas and transmission of intelligence that could not fail to react profoundly upon the developing culture of the people. The commercial people become tolerant of customs other than their own and learn familiarity with strange and remote localities. All this variety of experience broadens their point of view and gives a ripeness and maturity to their culture which no other influence can bring.

Thus, in the transition from tribal to civil society there occur important modifications in the social structure, making it more elastic and broadening its scope and power of adaptation. Men begin to recognize, through force of adverse or favorable circumstances, that the local

group which reared and nurtured them is but part of a wider society. A wealth of race experience is acquired along with an increasingly secure economic basis for both individual and social life. Production, local exchange of wares, and extensive commercial relations are developed. Economic and industrial activities become of more importance than warfare, and continuous prosperity and freedom from dangerous famines is the lot of larger and larger numbers of mankind. With a more plastic and flexible structure of social relations, founded upon a substantial and extensive economy, the plane of the struggle for existence is, for most of mankind, once for all raised above the level of the brute, and the increasing dependence placed upon the intellectual and ethical element assures a truer realization of justice, humanity and happiness.

SUPPLEMENTARY READINGS.

Dealey, J. Q.—*The Family in Its Sociological Aspects.*
Giddings, F. H.—*Principles of Sociology.*
Giddings, F. H.—*Descriptive and Historical Sociology.*
Ginnell.—*The Brehon Laws.*
Maine, H. S.—*The Early History of Institutions.*
Morgan, L. H.—*Ancient Society.*
Myres, J. L.—*The Dawn of History.*
Seebohm, F.—*The Tribal System in Wales.*
Seebohm, F.—*Tribal Custom in Anglo-Saxon Law.*
Seebohm, H. E.—*The Structure of Greek Tribal Society.*
Seligman, E. R. A.—*The Principles of Economics.*
Tacitus.—*Germania.*
Thomas, W. I.—*Source Book for Social Origins.*

APPENDIX I. EXAMPLES OF SOCIAL AND SOCIETAL SELECTION[1]

The collective regulation of the individual extends to a greater range of thought and action in primitive society than with us. The struggle for existence is far more severe, for famine, pestilence, drought, wild beasts, and ferocious enemies are an ever-present menace. Moreover, men are so ignorant of the causes of these phenomena that they are loath to run the risk of new ways of meeting old needs when use and wont have demonstrated the security of established modes of action. Hence society cannot afford to take the risk of innovation, and the pressure of ancient belief, of immemorial custom, and of mechanical ceremony is harsh and arbitrary. Primitive social ascendancy is impatient of individual idiosyncrasy and manifests itself in those cruder forms of social control which coerce and constrain from without. The subtle and refined instruments of social order, such as enlightenment and personal ideals, are less important than tribal law, social custom, magical ceremony, and belief in the supernatural.

Mrs. Elsie Clews Parsons[2] has assembled some interesting material showing how belief in the supernatural is a very potent means of preserving the primitive social order. The "bogy-man" who carries off naughty children, who eats and kills unmanageable juniors, is appealed to by primitive parents to keep the children where they belong and out of the way of adults. The owl will come and take away noisy children of the Thompson

[1] "Primitive Social Ascendancy Viewed as an Agent of Selection in Society." By F. Stuart Chapin. Reprinted by kind permission from *Publications of the American Sociological Society*, Vol. XII, 1917.

[2] "Links between Religion and Morality in Early Culture," *Amer. Anthropol.*, XVII, No. 1, pp. 41–57.

River, Kootenay, and Sioux Indians.[3] Caffre children are threatened with the Nomgogwana monster.[4] The Gineet-Gineet of the Euahlayi tribe of New South Wales is alert to catch bad children in his net.[5]

In initiation ceremonies the social hold upon the novice is strengthened by taboo. Boys and girls of the Lower Murry tribes in Australia are told that to eat emu, wild duck, swans, geese, black duck, or the eggs of any of these birds will cause their hair to become prematurely gray and their muscles to shrink.[6] If a Urabunna initiate should allow a woman to see one of the secret sticks, he and his mother and sisters would drop dead.[7]

Those who commit incest among the Omeo tribe of Victoria are beaten by the "jidjigongs" or snakes. Anyone who married into prohibited subclasses of the Queensland savages would die because his behavior was offensive to Kohin, an earth-roaming spirit of the Milky Way.[8] The islanders of the Malay Archipelago believe that sickness will follow the eating of stolen food from tabooed fields.[9] Batak thieves are cursed by the magic of the great priest of Baglige.[10] Iconoclasts among the Dakota, Ainu, and in the Malay Archipelago will be punished by supernatural powers.[11]

Australian blackfellows are educated from their infancy to believe that departure from the customs of the tribe will inevitably be followed by such evils as becoming prematurely gray, being afflicted with ophthalmia, skin eruptions, or sickness, and

[3] J. Teit, "The Thompson River Indians," *Mem. Amer. Mus. Nat. Hist.*, II, 108.

[4] D. Kidd, *Savage Children* (London, 1906), pp. 96–97.

[5] K. L. Parker, *The Euahlayi Tribe* (London, 1905), p. 137.

[6] P. Beveridge, *Jour. and Proc. Roy. Soc., New So. Wales*, XVII (1883), 27.

[7] B. Spencer and F. J. Gillen, *The Northern Tribes of Central Australia* (London and New York, 1904), p. 498.

[8] A. W. Howitt, *The Natives of South-East Australia* (London and New York, 1904), p. 498.

[9] M. Bartels, *Die Medicin der Naturvölker* (Leipzig, 1893), p. 29.

[10] J. von Brenner, *Besuch bei den Kannibalen Sumatres* (Würzberg, 1894), p. 226.

[11] M. Eastman, *Dacotah* (New York, 1849), p. 87; H. R. Schoolcraft,

death from evil magic.[12] African Bakalai believe that if a man should eat his totem the women of his clan would miscarry and give birth to animals of the totem kind, or die of some awful disease.[13] If a man of the Elk clan of the Omahas ate of any part of the male elk, he would break out in boils and white spots on different parts of his body.[14] Among the Samoans the man who ate a turtle would grow very ill, and the turtle within him would say, "He ate me; I am killing him."[15] Members of the secret society of the Hohewachi, fixing their minds on an offender against Omaha tribal custom, thrust him from all helpful relations with man and animals, so that he suffers misfortune or death.[16] And so it goes, belief in the supernatural being invoked to terrify children into obedience to parents, adults into conformity to custom, and all offenders into submission to society. In this way a selected and approved conduct is obtained and the social order preserved without violence.

But since the punishments promised by belief are not always immediate and the social order must be preserved, the group supplements control by this means with rougher methods. Seri marriage customs are enforced on pain of ostracism and outlawry.[17] An Omaha brave, well on toward the high rank of chief, yielded to temptation and went upon an unauthorized war party without first performing the ceremonies that alone could give the enterprise the sanction of the tribe. Although he was successful, he was punished by debasement for breaking tribal custom.[18] Deliberate murder among the Omahas is punished by banishment for four years of solitary life outside the village, communicating with no one.[19]

Indian Tribes, II (Philadelphia, 1851–57), 195–96; J. Bachelor, *The Ainu and Their Folk-Lore* (London, 1901), pp. 58, 177–78.

12 E. M. Curr, *The Australian Race*, I (1866), 52.

13 Du Chailler, *Equatorial Africa*, p. 309.

14 *Third Annual Report, Bureau of American Ethnology*, p. 225.

15 Turner, *Samoa*, p. 50.

16 *Twenty-seventh Annual Report, Bureau of American Ethnology*, p. 497.

17 *Seventeenth Annual Report, Bureau of American Ethnology*, p. 283.

18 *Twenty-seventh Annual Report, Bureau of American Ethnology*, p. 405.

19 *Ibid.*, p. 215.

A serious breach of tribal custom among the Wyandot is punished by outlawry declared after formal trial before the tribal council. Should the offender continue in the commission of the wrong act, it is lawful for any person to kill him on sight, and sometimes it becomes the duty of all men to kill him.[20] The Kamilaroi drive out of the company of his friends a man who persists in keeping as his wife a woman of a subclass with which his subclass must not marry. When this does not induce him to leave the woman, his male kindred follow him and kill him, and the female kindred kill her.[21]

One who makes light of the authority of the chiefs or of the sacred packs of the Omaha is considered a disturber of the peace, and by order of the tribe is killed by being wounded with the poisoned end of a staff.[22] Among the Tlingit, when a murderer is not high caste enough to make up for the dead man, a council of the people of the victim gather before the house of a man of equal caste and call him out to be killed.[23] A murderer or his nearest kin is killed by the Iowa.[24] The natives of Southeast Australia ordinarily kill young men who transgress the marriage class rules. The Karamundi and Barkinji kill men who break the totem marriage rules. The Yaitma-thang and Wolgal tribes usually punish infringements of this sort by death. Among the Tongarankas the whole tribe take a hand in the killing of an offender against marriage laws or class rules.[25]

Adultery is a particularly heinous offense against marriage customs, and among many primitive peoples is punished by death. It is regarded as a grave transgression because the wife is ordinarily considered to be the property of her husband.[26] In Melanesia adultery is regarded as an offense against society. The man who commits it is led before the chief, judged by the

[20] *First Annual Report, Bureau of American Ethnology,* pp. 67–68.
[21] Howitt, *op. cit.,* p. 208.
[22] *Twenty-seventh Annual Report, Bureau of American Ethnology,* p. 213.
[23] *Twenty-sixth Annual Report, Bureau of American Ethnology,* p. 449.
[24] *Fifteenth Annual Report, Bureau of American Ethnology,* p. 239.
[25] Howitt, *op. cit.,* p. 332.
[26] Letourneau, *The Evolution of Marriage and the Family* (London, 1904), pp. 208–27.

council of elders, and executed on the spot.[27] In Africa, at Bornon, the guilty ones are bound hand and foot, and their heads smashed by being struck together.[28] In Uganda King M 'tesa caused adulterers to be dismembered, having one limb at a time cut off and thrown to the vultures, who feasted on it before the eyes of the sufferers.[29] The reindeer Koriaks, of the Eskimo, kill at once a man and woman taken in adultery.[30] The Pipiles of Salvador punish the delinquents with death.[31] In Yucatan the guilty ones were stoned or pierced with arrows and impaled or disjointed.[32] Ancient Mexicans generally punished the offense with stoning.[33]

Several Australian tribes punish by death penalty those who reveal tribal secrets. The Gommera order the killing of any man who reveals the bull roarer to a woman, or any of the secrets of the Bunan or the Kuringal. The council of Headmen of the Kamilaroi tribes may decree the death of men whose conduct is irregular.[34] The Kamilaroi tribe of the Gwydii River kill a man who has spoken to or has had any communication with his wife's mother.[35] The Chepara kill men who become insane or have the habit of idiotically muttering to themselves because they are considered *Wulle*.[36]

Clearly some principle of interpreting this mass of selective phenomena is necessary to throw light upon the type of adaptation secured by social control. An examination of the treatment that sociologists have given to selection in society indicates a state of confusion upon this point. Natural selection is not always distinguished from social selection,[37] and the terms social selec-

27 De Rochas, *Nouvelle Caledonia*, p. 262.
28 Denham and Clapperton, *Hist. univ. des. Voy*, T. XXVII, p. 437.
29 Speke, *Voyage to the Sources of the Nile*, p. 343.
30 Démeunier, *Moeurs des différent peuples*, T. Ier, p. 219.
31 Bancroft, *Native Races*, II, 675.
32 *Ibid.*, p. 674.
33 Prescott, *Hist. Conq. of Mexico*, I, 26.
34 Howitt, *op. cit.*, p. 343.
35 *Ibid.*, p. 208.
36 Howitt, p. 354.
37 F. H. Giddings, *Principles of Sociology* (New York, 1909), p 326;

tion and societal selection are used interchangeably to designate selective processes that secure quite different forms of adaptation. What some writers call counterselection,[38] or misselection,[39] are really forms of social selection. While it is not wise to try to force formal logic on mobile life-processes which are in a state of flux and forming, it is at least worth the effort to make an attempt at consistent classification.

When a human being gets in the way of ponderous social institutions or aged customs driven by the momentum of antiquity, a social selection takes place; the unlucky individual may be crushed to physical extermination, or simply pushed out of the ways of ordinary social intercourse. In any event a social selection quite different from natural selection occurs, and in the long run the process seems to result in the survival of a race of tractable and conforming individuals.

Considering this phenomenon we find that sociologists have not always distinguished between selection that works on the physical plane and selection that works on the psychic plane. This distinction is very important, for selection on the physical plane involves the extermination of the individual and brings decisive results. The antisocial, the innovators, the non-conformists, and offenders are once for all eliminated. Selection on the psychic plane is milder. It merely modifies conduct and thought. It fails to strike through to racial stock and secure a physical basis for perpetuating its gains.

Let us examine this selective process that works on the physical plane. It manifests itself in various ways. Sometimes it involves the killing of helpless non-producers—the aged and the infants—as in parricide or infanticide. These victims of social power are not offenders against social usage; their only sin is that they stand in the way of group survival. In communities where these practices flourish the struggle for existence is severe and food is scarce, so that this established population policy of

and C. A. Ellwood, *Sociology in Its Psychological Aspects* (New York, 1915), p. 56.

[38] A. G. Keller, *Societal Evolution* (New York, 1915), chap. vi.

[39] E. A. Ross, *Social Control* (New York, 1910), p. 424; and *Foundations of Sociology* (New York, 1905), pp. 328–30, 335–39.

the group has received rough confirmation by natural selection working groupwise. In such a case the dominating mode of the social mind is one of formal like-mindedness. Sometimes the selective death-rate is more clearly seen, as when society deliberately destroys the offender against its ways. Again, the impulsive action of a mob crushes the life of an offender. Sometimes conventions of the leisure class and higher standards of comfort delay marriage among certain strains of the population so that they multiply more slowly than the squalid and reckless. Sometimes war reverses the process of survival of the physically fit, who, first chosen by strict military standards, are later slaughtered wholesale by machinery, like so much meat in a grinder, and the weak are left behind to perpetuate the race. Again, a formal and custom-bound religious system, intolerant of independent thought, ruthlessly tortures and kills the rationally intellectual. And thus the human variate is caught and crushed to death in social machinery that other men of other ages have by their collective behavior set in motion, and thus the innovator, the non-conformist, the offender, and, in fact, any who dare originate or advocate a new idea are executed, lynched, stoned, hanged, or burned to death by torture, for the mills of society grind ruthlessly if not consistently fair.

But selection in society is not always of the bloody type that kills, and it often fails to mold the race by establishing a selective birth-rate. Social selection takes place on the psychic plane also. Squatters upon the path of some social institution may be merely thrust aside, while the procession proceeds upon its ponderous way. Innovators and offenders against the customary are simply constrained or coerced into approved behavior. It is not always necessary to crush the delinquent lifeless in order that his anti-social act or new idea may be eliminated.

The manifestations of social selection upon the psychic plane are manifold. Sometimes the offender is separated from the privileges of association with his fellows by expulsion from society. This process takes the social forms of ostracism and imprisonment, the political forms of banishment, exile, and outlawry, and the ecclesiastical forms of excommunication and interdict. In all these ways the harmful idea and conduct are

got rid of by doing away temporarily or permanently with the individual who originates or practices them. Sometimes the method of physical chastisement and corporal punishment are used to coerce delinquents. Finally, direct selection of ideas may proceed with great deliberation, as in formal discussion by a legislative body of the merits of some resolution. Perhaps the highest type of this selective process is seen in those forms of popular legislation known as the initiative, the referendum, and the recall of elected officials, as well as in popular voting under universal suffrage.

Ross [40] in speaking of social selection and Keller [41] in describing the process of societal selection have called attention to the difference between selection that takes place upon the physical plane and that which takes place upon the psychic plane. Yet even these authors have left the matter somewhat indefinite. I would therefore suggest the following distinctions in an endeavor to attain a sound basis for clear thinking about this important phenomenon of social life. The terminology has been worked out in consideration of the foregoing analysis, in the belief that it may help to correct a confusion in thought that is so clearly indicated by confusion in prevailing terminology.[42]

When the pressure of social ascendancy or the slow crowding of social conditions, customs, and conventions causes the death of any individual or the termination of his family line, the phenomenon is *social selection*. Now this social selection not only takes the form of conscious group action to exterminate offenders or obnoxious persons, but there is also the blind and non-purposive crowding of technique conditions and social institutions which often establishes a selective death-rate or a selective birth-rate. Hence, borrowing a distinction from Keller,[43] we may say that social selection is sometimes rational and sometimes automatic. It is automatic whenever the victim has met his fate

[40] *Social Control*, pp. 323, 437; *Foundations of Sociology*, pp. 343–48.

[41] *Societal Evolution*, pp. 71–72, 89.

[42] I proposed substantially this terminology for these types of social selection in an article, "The Experimental Method and Sociology," *Scientific Monthly*, February–March, 1917.

[43] *Op. cit.*, chaps. iii, iv, and v.

from standing in the way of slowly changing custom, or has dashed himself against the impenetrable surface of an ancient institution, or is killed by the impulsive action of a mob. In the latter case the dominating mode of the social mind is what Giddings calls sympathetic like-mindedness; in the former cases it is formal like-mindedness of the people that has set the conditioning limits of social selection. On the other hand, the process becomes rational whenever a non-conformist or an offender is exterminated by the deliberate, thought-out plan of action exemplified in execution that follows formal trial, or in capital punishment after criminal procedure. In all such cases the dominating mode of the social mind is rational like-mindedness. Now in these different forms of social selection it should always be remembered that the objectionable thing which is got rid of is, in general, the misfit idea, act, or habit. The killing of its exponent or promoter is only incidental to the accomplishment of this conscious or dimly perceived end. Thus social selection works upon the raw materials of psychic stuff, although it acts upon a physical plane.

Turning now to that form of selection which works upon a psychic plane, attaining its results by the coercion and constraint of human variates, I would suggest the term *societal selection* for this process. Societal selection, therefore, is the phenomenon of the constraint or exclusion from the group of obstructionists, innovators, non-conformists, or social offenders, or of the ejection from the social mind of an objectionable practice. This process is sometimes automatic and sometimes rational. It is automatic when an offender is ostracized, as Maxim Gorki was shunned by the American public. It is rational when an objectionable person is deliberately excluded from the group for definite and well-understood reasons. Its political forms are seen in exile, banishment, and outlawry. Excommunication and interdict are its ecclesiastical forms. The distinctly social form of rational societal selection is imprisonment of delinquents and especially the individualization of punishment. Here again, as in social selection, the objectionable thing got rid of is, in general, the offensive idea, act, or habit, but in this case the end is accomplished by milder means. Not only is societal selection less

harsh, it is also more direct. Misfit ideas are expelled from the social mind in the act of formal voting by any deliberative body of human beings, whether at an election, in legislative assembly, or by the popular initiative, referendum, and the recall of elected officials.

Assuming for the moment that this proposed terminology, which I believe corresponds to real and significant distinctions, meets with your approval, let me conclude with a brief examination of the types of adaptation attained by social as contrasted with societal selection. If we consider social adaptation as such a relationship between human individuals, social groups, or institutions as is favorable to existence and growth,[44] then analysis discloses the following facts.

Social selection working on the physical plane exterminates the antisocial and solves the problem of the social order so that it stays solved. It works on instinct and evolves a human type with inborn social tendencies. But the process is expensive. The criteria of social selection are often set by blind social conditions or accidentally and ignorantly attained. Unequable tax systems and impediments upon the marriage of the intellectual discourage propagation of the best stock. The machinery of social selection is rude. As often as not the innocent man is lynched, and justice frequently miscarries. There is no racial gain from the vicarious death penalty. Among the Tlingit Indians when a murderer is not high caste enough to atone for the dead man, an innocent man of the same caste who belongs to the kin of the offender is killed.[45] Social selection is unduly harsh in case of minor offenses. The primitive man who revealed tribal secrets or married in violation of his class or totem rules was killed. Even in England it was not until 1832 that the death penalty for sheep, cattle, and horse stealing was abolished.[46] Finally social selection fails to recognize in certain types of psychic variation a higher social usefulness than is apparent on the surface, and so genius and original ability have been ruthlessly crushed out.

[44] L. M. Bristol, *Social Adaptation* (Cambridge, 1915), p. 8.

[45] *Twenty-sixth Annual Report, Bureau of American Ethnology*, p. 449.

[46] J. F. Stephen, *History of the Criminal Law of England*, I (London, 1883), 474–75.

Galton has shown how the Catholic church brutalized the breed of our forefathers by first condemning gentle natures to celibacy and then making "another sweep of her huge nets, this time fishing in stirring waters, to catch those who were the most fearless, truth-seeking, and intelligent in their modes of thought, and therefore the most suitable parents of a high civilization . . . put a strong check, if not a direct stop, to their progeny." [47]

Social selection is also slow in attaining its adaptation. It takes ages of bloodshed accompanied by sanguinary waste to secure the tame and tractable type. Moreover, when its work is done and the race has been purged of antisocial strains, it is adaptation to past conditions that is achieved. In the meantime a new social order has, like as not, arisen and sweeping changes in the criteria of selection have appeared. In short, "We must not," as Ross says, "overlook the fact that selection adapts men to yesterday's conditions, not to to-day's." [48] Humanitarians have always perceived the cruelty, inefficiency, and waste of social selection and have striven to hasten the evolutionary tendency away from social selection to a milder form of the weeding-out process. The historical trend toward gentler penalties for offensive conduct is known to all. Let us consider, therefore, the type of adaptation achieved by selection that works on the psychic plane.

Societal selection attains its adaptation by coercing and restraining the offender and modifies his conduct or ideas while living. It works on habit, weeding out the misfit act, and achieves a superficial surface adaptation that may not endure without the restraining pressure of social ascendancy. Spin loose the binding-screw of the social presses, custom and convention, and primitive human nature flares out in savage impulse. Robert Owen thought that he could establish an ideal community by doing away with the existing institutions of marriage, private property, and religion, yet the disastrous failure of this New Harmony experiment seemed to prove the instability of man's social nature without these balance wheels of social order.[49]

[47] *Hereditary Genius* (New York, 1892), pp. 343–44.

[48] *Social Control*, p. 9.

[49] Chapin, note 42, p. 304, *ante;* also "Moral Progress," *Popular Science Monthly*, May, 1915.

Adaptation attained by societal selection has the merit of being cheap. It is not wasteful of human life and spills no blood. Yet the conformity of the browbeaten innovator who secretly muses upon his grievance is far from wholesome. It is superficial adaptation often purchased at loss of self-respect. The wastes of societal selection are in no track of blood, but in a trail of broken spirits and festering hypocrisy. Happily the increasing rationalization of societal selection has discovered a refined instrument of social order in the form of individualization of punishment. By this device the pressure of social ascendancy may be delicately adjusted, and conformity may be secured without danger of undermining the self-resource and self-respect of an offender. The direct selection of ideas has been made more efficient by such devices as parliamentary rules of procedure, and by the machinery of the popular initiative and referendum.

Besides being cheap, another merit of societal selection is that it secures quick results—adaptation is relatively immediate. The young of one generation after another are readily molded to type. For this reason, when adaptation is at last attained it is more nearly adaptation to contemporary conditions than can ever be the case with adaptation produced by social selection. In short, the adaptation lag is less than that which follows social selection. But even the rational form of societal selection is at best only a hit-or-miss effort to solve the problems of the social order. It must always remain largely the method of trial and error practiced collectively and necessarily accompanied by considerable waste. Viewed in evolutionary perspective its lasting achievements are only those which natural selection working groupwise has had time to confirm. McGee [50] describes a curious case in which the Seri taboo against the killing of smaller rodents has permitted their multiplication in such numbers that hundreds of square miles of territory round about Seriland have been honeycombed with their burrows. "A special consequence of the tabu is found in the fact that the myriad squirrel tunnels have rendered much of the territory impassable for horses and

[50] *Seventeenth Annual Report, Bureau of American Ethnology*, Part I, p. 203.

nearly so for pedestrians, and have thereby served to repel invaders and enable the jealous tribesmen to protect their principality against the hated alien.'' In such cases of confirmation by natural selection, reason is only subsequently applied to justify.

Keller [51] has made good the point that rational societal selection is most active and successful in the realm of maintenance mores. ''The nearer the mores come to the struggle for existence, the more nearly they concern self-maintenance,'' says Keller, ''the more vivid is the demonstration of their expediency and inexpediency.'' [52] In other words, the adequacy of means to ends is most striking in maintenance mores. Hence rational societal selections that have taken place in subsistence activities are subjected to the searching test of expediency, and it is these adaptations that natural selection working groupwise is quickest to confirm.

Science makes rational societal selection coincide with the limitations set by nature's laws. Health ordinances based upon sanitary science favor the survival of communities practicing them. Thus rational societal selection, when really effective, becomes impersonal, like an elemental force of nature, because natural selection working groupwise confirms its adaptations. This is why man has progressed so far in manual and industrial arts and in engineering and has been so slow to develop social science. In the former field natural selection is quick to note survival value and to ratify or reject; in the latter field there is no such decisive test.

But although the process of societal selection attains adaptation at less cost and time, its results do not ''stay put.'' Its adaptations, unless confirmed by natural selection working groupwise, depend upon the continuing pressure of social ascendancy. Remove the pressure and the social order disintegrates. Russian society becomes chaotic as soon as the firm grip of its ancient ruling order is relaxed. Utopian communities have ever failed to preserve tranquillity once the restraining bonds of custom and

[51] *Societal Evolution*, pp. 130–32.
[52] *Ibid.*, p. 132.

convention are loosened. In revolutions, wars, and riots primitive human nature bursts through the thin veneer of civilization.

If, in conclusion, we agree that there has been a well-defined historical tendency away from harsh social selection toward mild societal selection, we are obliged to admit that the bulk of social adaptation is no longer capitalized in instinct and race traits, but is taken out in adjustments on the slippery ground of habit and custom. Biologically speaking, social adaptation is in modification, not in congenital variation. If it is true that the modern social order develops no new social instincts, only new habits, then the wild orgy of counterselection we have indulged in throughout Europe should arouse us to the imperative need of more rational social selection. Although we stand committed against a return to the selective death-rate, we may yet consistently favor a selective birth-rate guided by the principles of the new science of eugenics. But, granted that we establish rational social selection in the form of the selective birth-rate of eugenics and mold a new race, how do we know that future conditions will suit this race? It may be said in answer that it is not a question of the future, but of the present. Natural and social selection have been restricted for so many centuries that man's present equipment in instinct (notably in the pugnacious, self-assertive, and acquisitive instincts) is adapted to conditions of long ago. There is need that the gap be reduced and that our equipment in instinct be caught up to modern requirements and responsibilities. This is all that rational social selection working in the form of a eugenic selective birth-rate proposes to do—to work out a better adaptation to contemporary conditions.

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